

STIC Search Report

EIC 1700

STIC Database Tracking Number: 186019

TO: Ling Xu
Location: REM 5E74
Art Unit : 1775
April 28, 2006

Case Serial Number: 10/690021

From: Mei Huang
Location: EIC 1700
REMSSEN 4B28
Phone: 571/272-3952
Mei.huang@uspto.gov

Search Notes

Examiner Xu,

Please feel free to contact me if you have any questions or if you would like to refine the search query,

Thank you for using STIC services!

Mei Huang



186019

SEARCH REQUEST FORM

Scientific and Technical Information Center

Examiner# : 77924

Art Unit : 1775

Phone Number: 272-1546

Date: 4/19/2006

Serial Number: 10/690,021

MailBox & Bldg/Room Location: Remsem 5e74

Results Format Preferred (circle): Paper Disk E-mail

SCIENTIFIC REFERENCE BR
Sci & Tech Inf. Ctr

APR 19 2006

If more than one search is submitted, please prioritize searches in order of need.

Pat. & T.M. Office

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc., if known. Please attach a copy of the coversheet, pertinent claims, and abstract.

Title of Invention:

Ferroelectric film, ferroelectric capacitor, ferroelectric memory, piezoelectric element, semiconductor element, method of manufacturing ferroelectric film, and method of manufacturing ferroelectric capacitor

Inventors (please provide full names):

Takeshi Kijima, Matsumoto-shi, JAPAN;
Yasuaki Hamada, Suwa-shi, JAPAN;
Eiji Natori, Chino-shi, JAPAN; Koji Ohashi, Chino-shi, JAPAN;

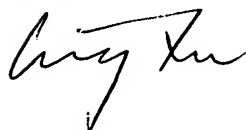
Earliest Priority Filing Date: 3/19/2003

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please search compound in claim 2, if not found, please extend to claim 1.

Please call me if you have any questions.

Thanks



Amendments to the Claims:

The following listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) A ferroelectric film that is described by a general formula $(\text{Pb}, \text{A})(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$,
 wherein an A element ~~comprises at least one of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu~~ consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu, LNT4/P6

wherein a B element comprises at least one of Zr, Ti, V, W, Hf and Ta, and

wherein x is within the range of: $0.05 \leq x \leq 0.4$.

2. (Currently Amended) A ferroelectric film that is described by $(\text{Pb}_{1-y}\text{A}_y)(\text{B}_{1-x}\text{Nb}_x)\text{O}_3$,
 wherein an A element ~~comprises at least one of La, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu~~ consists of an element selected from the group consisting of Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb and Lu,

wherein y is within the range of: $0 < y \leq 0.2$,

wherein a B element comprises at least one of Zr, Ti, V, W, Hf and Ta, and

wherein x is within the range of: $0.05 \leq x \leq 0.4$.

3-7. (Canceled)

8. (Currently Amended) The ferroelectric film as defined by claim 1, further comprising:

Si, Ge or Si and Ge.

9. (Currently Amended) The ferroelectric film as defined by claim 1, further comprising:

Si, Ge or Si and Ge of from about 0.5 mol% to about 5 mol%.

10-23. (Canceled)

24. (Previously Presented) A ferroelectric memory device comprising:

a substrate;

a transistor formed on the substrate; and

a ferroelectric capacitor formed above the substrate,

wherein the ferroelectric capacitor comprises a ferroelectric film as defined by

claim 1.

25. (Previously Presented) A piezoelectric actuator comprising:

a substrate; and

a piezoelectric element formed above the substrate,

wherein the piezoelectric element comprises a ferroelectric film as defined by

claim 1.

26. (Canceled)

27. (Currently Amended) The ferroelectric film as defined by claim 2, further

comprising:

Si, Ge or Si and Ge.

28. (Currently Amended) The ferroelectric film as defined by claim 2, further

comprising:

Si, Ge or Si and Ge of from about 0.5 mol% to about 5 mol%.

29. (Previously Presented) A ferroelectric memory device comprising:

a substrate;

a transistor formed on the substrate; and

a ferroelectric capacitor formed above the substrate,

wherein the ferroelectric capacitor comprises a ferroelectric film as defined by

claim 2.

30. (Previously Presented) A piezoelectric actuator comprising:
a substrate; and
a piezoelectric element formed above the substrate,
wherein the piezoelectric element comprises a ferroelectric film as defined by
claim 2.

31. (New) The ferroelectric film as defined by claim 1, wherein the B element
comprises at least Zr and Ti, and optionally further includes any of V, W, Hf or Ta, and
wherein a mol% of Ti is greater than a mol% of Zr.

32. (New) The ferroelectric film as defined by claim 2, wherein the B element
comprises at least Zr and Ti, and optionally further includes any of V, W, Hf or Ta, and
wherein a mol% of Ti is greater than a mol% of Zr.



STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact *the EIC searcher* or contact:

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- I am an examiner in Workgroup: Example: 1713
➤ Relevant prior art **found**, search results used as follows:

- ☐ 102 rejection
- ☐ 103 rejection
- ☐ Cited as being of interest.
- ☐ Helped examiner better understand the invention.
- ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
(journal articles, conference proceedings, new product announcements etc.)

➤ Relevant prior art **not found**:

- ☐ Results verified the lack of relevant prior art (helped determine patentability).
- ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

=> => fil reg

FILE 'REGISTRY' ENTERED AT 15:08:46 ON 28 APR 2006

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(FILE 'HOME' ENTERED AT 13:41:07 ON 28 APR 2006)

FILE 'HCAPLUS' ENTERED AT 13:41:29 ON 28 APR 2006

E US20040214352/PN

L1 1 SEA US2004214352/PN
D IALL
SEL RN

FILE 'REGISTRY' ENTERED AT 13:46:20 ON 28 APR 2006

L2 2 SEA (683745-93-9/BI OR 683745-94-0/BI)
D SCA
L3 1319 SEA (PB(L) (CE OR PR OR ND OR PM OR SM OR EU OR GD OR TB
OR DY OR HO OR ER OR TM OR YB OR LU) (L) (ZR OR TI OR V OR
W OR HF OR TA) (L) NB(L) O) /ELS
L4 91 SEA L3(L) 5/ELC.SUB
L5 0 SEA L2 AND L4
L6 120 SEA L3(L) 6/ELC.SUB

FILE 'HCAPLUS' ENTERED AT 14:31:35 ON 28 APR 2006

L7 51 SEA L4
L8 64664 SEA FERROELEC# OR FERRO(A)ELEC# OR FERROELECTRIC? OR
FERRO(A)ELECTRIC?
L9 41 SEA L7 AND L8
L10 12742 SEA L8(2A) (FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR
OVERLAID? OR LAMIN? OR LAMEL? OR (MULTILAYER?) OR SHEET?
OR LEAF? OR FOIL? OR COAT? OR TOPCOAT? OR OVERCOAT? OR
VENEER? OR SHEATH? OR COVER? OR ENVELOP? OR ENCAS? OR
ENWRAP? OR OVERSPREAD?)
L11 11 SEA L7 AND L10

FILE 'REGISTRY' ENTERED AT 14:56:18 ON 28 APR 2006

L12 12175 SEA (PB(L) (ZR OR TI OR V OR W OR HF OR TA) (L) NB(L) O) /ELS
L13 1245 SEA L12(L) 4-5/ELC.SUB
L14 1245 SEA L13 AND TIS/CI

FILE 'HCAPLUS' ENTERED AT 14:59:31 ON 28 APR 2006

L15 2095 SEA L14
L16 1268 SEA L15 AND L8
L17 172 SEA L15 AND L10
L18 107 SEA L17 AND (1840-2002/PY OR 1840-2002/PRY)
L19 41 SEA L9 OR L11
L20 30 SEA L19 NOT L11
L21 51 SEA L7 OR L19

L22 10 SEA L21 NOT L19

FILE 'REGISTRY' ENTERED AT 15:08:46 ON 28 APR 2006

=> fil hcap

FILE 'HCAPLUS' ENTERED AT 15:08:53 ON 28 APR 2006

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=> d l11 ibib abs hitstr hitind 1-11

L11 ANSWER 1 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:1158978 HCAPLUS

DOCUMENT NUMBER: 144:161603

TITLE: Dielectric nonlinearity of (100) oriented
PYbN-PT thin films

AUTHOR(S): Gharb, N. Bassiri; Trolrier-McKinstry, S.

CORPORATE SOURCE: Materials Research Institute and Materials
Science and Engineering Department, The
Pennsylvania State University, University Park,
PA, 16802, USASOURCE: IEEE International Symposium on Applications of
Ferroelectrics--ISAF-04, 14th, Montreal, QC,
Canada, Aug. 23-27, 2004 (2005), Meeting Date
2004, 95-97. Editor(s): Yuhua, Marjorie
Passini. Institute of Electrical and
Electronics Engineers: New York, N. Y.
CODEN: 69HMMI; ISBN: 0-7803-8410-5

DOCUMENT TYPE: Conference

LANGUAGE: English

AB The extrinsic contributions to the dielec. response of
0.5Pb(Yb1/2Nb1/2)O3-0.5PbTiO3 thin films with (100) crystallog.
orientation were studied (all indexes are given in terms of the
pseudo-cubic cell). At 30kV/cm, the irreversible contribution in
the (100) oriented PYbN-PT films supplies 34% of the total dielec.
response of the film. The dielec. nonlinearity of the films showed
almost no variation with application of mech. stress on the films.IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb0.25Ti0.5Yb0.25O3)RL: PRP (Properties); TEM (Technical or engineered material use);
USES (Uses)(dielec. nonlinearity of (100) oriented 0.5Pb(Yb1/2Nb1/2)O3-
0.5PbTiO3 thin films)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component
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04/28/2006

		Registry Number
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-9 (Electric Phenomena)

IT Crystal structure

Dielectric constant

Ferroelectric films

(dielec. nonlinearity of (100) oriented 0.5Pb(Yb₁/2Nb₁/2)O₃-0.5PbTiO₃ thin films)

IT 170965-44-3, Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PRP (Properties); TEM (Technical or engineered material use); USES (Uses)

(dielec. nonlinearity of (100) oriented 0.5Pb(Yb₁/2Nb₁/2)O₃-0.5PbTiO₃ thin films)

REFERENCE COUNT: 22 THERE ARE 22 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L11 ANSWER 2 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:984691 HCAPLUS

DOCUMENT NUMBER: 144:62329

TITLE: High performance piezoelectric films for high frequency MEMS ultrasonic transducers

AUTHOR(S): Zhang, Q. Q.; Djuth, F. T.; Zhou, Q. F.; Shung, K. K.

CORPORATE SOURCE: Geospace Research, Inc., EI Segundo, CA, 90245, USA

SOURCE: Proceedings - IEEE Ultrasonics Symposium (2004), (Vol. 3), 1954-1957

CODEN: PIEUEZ; ISSN: 1051-0117

PUBLISHER: Institute of Electrical and Electronics Engineers

DOCUMENT TYPE: Journal

LANGUAGE: English

AB (1-X)Pb[Yb₁/2Nb₁/2]O₃-xPbTiO₃ (PYbN-PT, x = 0.5) thin films were studied for high frequency transducer applications. Firstly, highly (001) oriented LaNiO₃ (LNO) thin films were prep'd. on Si (001) substrates by a simple metal org. decompn. technique. The room temp. resistivity of the LNO thin films was 0.65 mΩ.cm. Then PYbN-PT thin films were deposited onto the LNO/Si substrates by sol-gel processing. X-ray diffraction anal. revealed that the films of PYbN-PT were highly (001) oriented along the LNO/Si substrates. The films had a uniform grain size of .apprx.80-120 nm. At 1 KHz, the dielec. permittivity was 920, and dielec. loss is .apprx.0.035. The ferroelec. films displayed good P-E hysteresis characteristics and better temp. stabilization compared

with films that have lower Curie temp. Finally, following PiezoCAD modeling, the PYbN-PT film high frequency transducer was designed.

IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb0.25Ti0.5Yb0.25O3)
RL: DEV (Device component use); USES (Uses)
(high performance piezoelec. films for high frequency
microelectromech. system ultrasonic transducers)
RN 170965-44-3 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

Section cross-reference(s): 57

IT 12031-63-9, Lithium niobium oxide (LiNbO3) 12034-65-0, Lead
niobium ytterbium oxide (PbNb0.5Yb0.5O3) 12060-00-3, Lead titanium
oxide (PbTiO3) 170965-44-3, Lead niobium titanium
ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3)
RL: DEV (Device component use); USES (Uses)
(high performance piezoelec. films for high frequency
microelectromech. system ultrasonic transducers)

REFERENCE COUNT: 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L11 ANSWER 3 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2005:486569 HCAPLUS

DOCUMENT NUMBER: 143:204078

TITLE: Structure and electrical properties of
sol-gel-derived (001)-oriented
Pb[Yb_{1/2}Nb_{1/2}]O₃-PbTiO₃ thin films grown on
LaNbO₃/Si(001) substrates

AUTHOR(S): Zhou, Q. F.; Shung, K. K.; Zhang, Q. Q.; Djuth,
F. T.

CORPORATE SOURCE: NIH Transducer Resource Center, Department of
Biomedical Engineering, University of Southern
California, Los Angeles, CA, 90089-1451, USA

SOURCE: Journal of Applied Physics (2005), 97(10, Pt.
1), 104103/1-104103/4

CODEN: JAPIAU; ISSN: 0021-8979

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB (1-X)Pb[Yb_{1/2}Nb_{1/2}]O₃-xPbTiO₃ (PYbN-PT, x = 0.5) oriented thin films

were deposited onto LaNiO₃ (LNO)/Si substrates by sol-gel processing. Highly (001)-oriented LNO thin films were prepd. by a simple metal-org. decompn. technique when sample annealed at 650° using a rapid thermal annealing. The room-temp. resistivity of LNO thin films was 0.65 mΩ cm. X-ray diffraction anal. revealed that the films of PYbN-PT were highly (001) oriented along LNO/Si substrates. No pyrochlore phase was obsd. by x-ray diffraction and films had a uniform grain size of .apprx.80-120 nm. At 1 kHz, the dielec. permittivity was 920 and dielec. loss is .apprx.0.035. The ferroelec. films displayed good P-E hysteresis characteristic and better temp. stabilization compared with the films that have low Curie temp.

IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PRP (Properties)

(structure and elec. properties of sol-gel-derived oriented Pb[Yb_{1/2}Nb_{1/2}]O₃-PbTiO₃ thin films grown on LaNbO₃/Si(001) substrates)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

IT Annealing

Curie temperature (ferroelectric)

Dielectric constant

Dielectric hysteresis

Dielectric loss

Electric resistance

Ferroelectric films

Ferroelectricity

X-ray diffraction

(structure and elec. properties of sol-gel-derived oriented Pb[Yb_{1/2}Nb_{1/2}]O₃-PbTiO₃ thin films grown on LaNbO₃/Si(001) substrates)

IT 12034-65-0, Lead niobium ytterbium oxide (PbNb_{0.5}Yb_{0.5}O₃)

12060-00-3, Lead titanium oxide (PbTiO₃) 170965-44-3, Lead

niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PRP (Properties)

(structure and elec. properties of sol-gel-derived oriented Pb[Yb_{1/2}Nb_{1/2}]O₃-PbTiO₃ thin films grown on LaNbO₃/Si(001) substrates)

REFERENCE COUNT: 19 THERE ARE 19 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L11 ANSWER 4 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
ACCESSION NUMBER: 2004:334112 HCAPLUS
DOCUMENT NUMBER: 141:341267
TITLE: Impact of Structure Ordering and Defects on
Properties of Complex Ferroelectric Perovskites
AUTHOR(S): Sternberg, A.; Antonova, M.; Livinsh, M.;
Dambekalne, M.; Kundzins, K.; Haessler, W.;
Bittner, R.; Weber, H.
CORPORATE SOURCE: Institute of Solid State Physics, University of
Latvia, Riga, LV-1063, Latvia
SOURCE: Ferroelectrics (2004), 298, 283-288
CODEN: FEROA8; ISSN: 0015-0193
PUBLISHER: Taylor & Francis, Inc.
DOCUMENT TYPE: Journal
LANGUAGE: English

AB Influence of the structure ordering, modification and defects on the
properties in ferroelec. ceramics and thin films are investigated.
Structural changes in perovskite type compds. with general formula
(1-x)Pb(B3+,Nb)TiO3-xPbTiO3 are realized by variation of it compn.
(by exchange of ions B3+ in B sublattice). The crystallog. features
of Pb(Lu1/2Nb1/2)O3-PbTiO3 (PLuNT) and PbSc1/2Nb1/2O3-PbLu1/2Nb1/2O3
(PSN-PLuN) compds. are discussed with respect to dielec.,
polarization and electro-mech. properties. The heterovalent
substitution of Pb2+ by La3+ in PLuNT ceramics either in both
components and maintaining the PbTiO3 unmodified shifts the MPB to
the pseudomonoclinic side of phase diagram. The initial unmodified
material "softens", coercive field Ec decreases and simultaneously
high values of max. and remnant polarization are characteristic.
Antiferroelec. thin films display higher radiation resistance than
ferroelec. heterostructures up to a neutron fluence of 2*1022 m-2 (E
> 0.1 MeV). The strong dependence of radiation-induced change of
properties on the quality of the films (epitaxial vs. polycryst.)
was found.

IT 263871-47-2, Lead lutetium niobium titanium oxide
(PbLu0-0.5Nb0-0.5Ti0-1O3) 273750-91-7, Lead lutetium
niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3)

RL: PRP (Properties)

(impact of structure ordering and defects on properties of
complex ferroelec. perovskites)

RN 263871-47-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0-0.5Nb0-0.5Ti0-1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0 - 1	7440-32-6

Nb	0 - 0.5	7440-03-1
Lu	0 - 0.5	7439-94-3
Pb	1	7439-92-1

RN 273750-91-7 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Lu	0.32	7439-94-3
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

ST ferroelec perovskite ceramics film structure
ordering defect dielec property

IT Annealing

Cation exchange

Crystal defects

Crystal structure-property relationship

Crystal vacancies

Dielectric constant

Dielectric hysteresis

Dielectric polarization

Ferroelectric films

Ferroelectricity

Order-disorder transition

Perovskite-type crystals

Phase diagram

Radiation hardness

Radiation induced crystal defects

(impact of structure ordering and defects on properties of
complex ferroelec. perovskites)IT 263871-47-2, Lead lutetium niobium titanium oxide
(PbLu0-0.5Nb0-0.5Ti0-1O3) 273750-91-7, Lead lutetium
niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) 773157-65-6, Lead
lutetium niobium scandium oxide (Pb(Lu,Sc)0.5Nb0.5O3)

RL: PRP (Properties)

(impact of structure ordering and defects on properties of
complex ferroelec. perovskites)REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L11 ANSWER 5 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:566522 HCAPLUS

DOCUMENT NUMBER: 139:205832

TITLE: Ceramics and thin films of some new
 $\text{Pb}(\text{B}_{3+}, \text{Nb})\text{TiO}_3$ - PbTiO_3 systems

AUTHOR(S): Sternberg, A.; Shebanovs, L.; Zauls, V.;
 Kundzins, K.

CORPORATE SOURCE: Institute of Solid State Physics, University of
 Latvia, Riga, LV-1063, Latvia

SOURCE: Ferroelectrics (2003), 286, 327-334
 CODEN: FEROA8; ISSN: 0015-0193

PUBLISHER: Taylor & Francis, Inc.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB The structure, dielec., and electromech. properties of (1 -
 x) $\text{Pb}(\text{B}_{3+}, \text{Nb})\text{TiO}_3$ -x PbTiO_3 binary systems (B = Lu, Er, Tb, Ho) are
 reported. The crystallog. features at the morphotropic phase
 boundary (MPB) between tetragonal $P4_{mm}$ and pseudo-monoclinic M
 phases are discussed with respect to electromech. properties.
 Doping effect (with La^{3+}) on the properties of ceramic samples of
 pseudobinary $\text{Pb}(\text{Lu}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 (PLuNT) system was studied.
 $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})$ - PbTiO_3 (PT) solid solns. were studied under different
 processing conditions for obtaining ceramics of 100% perovskite
 structure with sufficient high ΔTEC .apprx. 1 K near room
 temp. The PLuNT with compn. near the MPB formed by in situ pulsed
 laser deposition onto LSCO/(100)MgO as well as PLuN thin
 films exhibit ferroelec. behavior at room temp.
 (in contrast to typical antiferroelec. features of PLuN ceramic).

IT 233685-93-3, Erbium lead niobium titanium oxide
 $(\text{Er}_{0.45}\text{PbNb}_{0.45}\text{Ti}_{0.10}\text{O}_3)$ 233685-94-4, Erbium lead niobium
 titanium oxide $(\text{Er}_{0.4}\text{PbNb}_{0.4}\text{Ti}_{0.20}\text{O}_3)$ 233685-95-5, Erbium
 lead niobium titanium oxide $(\text{Er}_{0.35}\text{PbNb}_{0.35}\text{Ti}_{0.30}\text{O}_3)$
 233685-97-7, Erbium lead niobium titanium oxide
 $(\text{Er}_{0.3}\text{PbNb}_{0.3}\text{Ti}_{0.40}\text{O}_3)$ 233685-99-9, Erbium lead niobium
 titanium oxide $(\text{Er}_{0.25}\text{PbNb}_{0.25}\text{Ti}_{0.50}\text{O}_3)$ 233686-00-5, Erbium
 lead niobium titanium oxide $(\text{Er}_{0.2}\text{PbNb}_{0.2}\text{Ti}_{0.60}\text{O}_3)$
 233686-01-6, Erbium lead niobium titanium oxide
 $(\text{Er}_{0.15}\text{PbNb}_{0.15}\text{Ti}_{0.70}\text{O}_3)$ 233686-02-7, Erbium lead niobium
 titanium oxide $(\text{Er}_{0.1}\text{PbNb}_{0.1}\text{Ti}_{0.80}\text{O}_3)$ 263872-43-1, Lead
 lutetium niobium titanium oxide $(\text{PbLu}_{0.45}\text{Nb}_{0.45}\text{Ti}_{0.10}\text{O}_3)$
 263872-44-2, Lead lutetium niobium titanium oxide
 $(\text{PbLu}_{0.4}\text{Nb}_{0.4}\text{Ti}_{0.20}\text{O}_3)$ 267409-80-3, Lead lutetium niobium
 titanium oxide $(\text{PbLu}_{0.3}\text{Nb}_{0.3}\text{Ti}_{0.40}\text{O}_3)$ 273750-90-6, Lead
 lutetium niobium titanium oxide $(\text{PbLu}_{0.35}\text{Nb}_{0.35}\text{Ti}_{0.30}\text{O}_3)$
 273750-91-7, Lead lutetium niobium titanium oxide
 $(\text{PbLu}_{0.32}\text{Nb}_{0.32}\text{Ti}_{0.36}\text{O}_3)$ 273750-93-9, Lead lutetium
 niobium titanium oxide $(\text{PbLu}_{0.25}\text{Nb}_{0.25}\text{Ti}_{0.50}\text{O}_3)$ 273750-94-0
 , Lead lutetium niobium titanium oxide $(\text{PbLu}_{0.2}\text{Nb}_{0.2}\text{Ti}_{0.60}\text{O}_3)$
 273750-95-1, Lead lutetium niobium titanium oxide
 $(\text{PbLu}_{0.15}\text{Nb}_{0.15}\text{Ti}_{0.70}\text{O}_3)$ 273750-96-2, Lead lutetium niobium
 titanium oxide $(\text{PbLu}_{0.1}\text{Nb}_{0.1}\text{Ti}_{0.80}\text{O}_3)$

RL: PRP (Properties)
 (prepn. and properties of ferroelec. ceramics and
 films of lead lanthanide niobate titanate)

RN 233685-93-3 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.45}PbNb_{0.45}Ti_{0.10}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.45	7440-52-0
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 233685-94-4 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.20}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.4	7440-52-0
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 233685-95-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.30}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.35	7440-52-0
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 233685-97-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.40}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.3	7440-52-0
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 233685-99-9 HCAPLUS

CN Erbium lead niobium titanium oxide (Er0.25PbNb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Er	0.25	7440-52-0
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 233686-00-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er0.2PbNb0.2Ti0.6O3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Er	0.2	7440-52-0
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 233686-01-6 HCAPLUS

CN Erbium lead niobium titanium oxide (Er0.15PbNb0.15Ti0.7O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Er	0.15	7440-52-0
Ti	0.7	7440-32-6
Nb	0.15	7440-03-1
Pb	1	7439-92-1

RN 233686-02-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er0.1PbNb0.1Ti0.8O3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Er	0.1	7440-52-0
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

RN 263872-43-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.45Nb0.45Ti0.1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.4Nb0.4Ti0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

RN 267409-80-3 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 273750-90-6 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Lu	0.35	7439-94-3
Pb	1	7439-92-1

RN 273750-91-7 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Lu	0.32	7439-94-3
Pb	1	7439-92-1

RN 273750-93-9 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Lu	0.25	7439-94-3
Pb	1	7439-92-1

RN 273750-94-0 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.2Nb0.2Ti0.6O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Lu	0.2	7439-94-3
Pb	1	7439-92-1

RN 273750-95-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.15Nb0.15Ti0.7O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.7	7440-32-6
Nb	0.15	7440-03-1
Lu	0.15	7439-94-3
Pb	1	7439-92-1

RN 273750-96-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Lu	0.1	7439-94-3
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57, 75

IT Ferroelectric materials

(ceramic; prepn. and properties of **ferroelec.** ceramics
and **films** of lead lanthanide niobate titanate)

IT Antiferroelectricity

Dielectric hysteresis

Ferroelectric films

Ferroelectric transition

Ferroelectricity

Perovskite-type crystals

Phase diagram

Piezoelectricity

Pyroelectricity

(prepn. and properties of **ferroelec.** ceramics and
films of lead lanthanide niobate titanate)

IT 12032-01-8, Lead lutetium niobium oxide (Pb₂LuNbO₆) 12060-00-3,
Lead titanium oxide (PbTiO₃) 12434-07-0, Erbium lead niobium oxide
(ErPb₂NbO₆) 233685-93-3, Erbium lead niobium titanium
oxide (Er_{0.45}PbNb_{0.45}Ti_{0.10}O₃) 233685-94-4, Erbium lead
niobium titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.2}O₃) 233685-95-5,
Erbium lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.3}O₃)
233685-97-7, Erbium lead niobium titanium oxide
(Er_{0.3}PbNb_{0.3}Ti_{0.4}O₃) 233685-99-9, Erbium lead niobium
titanium oxide (Er_{0.25}PbNb_{0.25}Ti_{0.5}O₃) 233686-00-5, Erbium
lead niobium titanium oxide (Er_{0.2}PbNb_{0.2}Ti_{0.6}O₃)
233686-01-6, Erbium lead niobium titanium oxide
(Er_{0.15}PbNb_{0.15}Ti_{0.7}O₃) 233686-02-7, Erbium lead niobium
titanium oxide (Er_{0.1}PbNb_{0.1}Ti_{0.8}O₃) 263872-43-1, Lead
lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃)
263872-44-2, Lead lutetium niobium titanium oxide
(PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) 267409-80-3, Lead lutetium niobium
titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 273750-90-6, Lead
lutetium niobium titanium oxide (PbLu_{0.35}Nb_{0.35}Ti_{0.3}O₃)
273750-91-7, Lead lutetium niobium titanium oxide
(PbLu_{0.32}Nb_{0.32}Ti_{0.36}O₃) 273750-93-9, Lead lutetium
niobium titanium oxide (PbLu_{0.25}Nb_{0.25}Ti_{0.5}O₃) 273750-94-0
, Lead lutetium niobium titanium oxide (PbLu_{0.2}Nb_{0.2}Ti_{0.6}O₃)
273750-95-1, Lead lutetium niobium titanium oxide
(PbLu_{0.15}Nb_{0.15}Ti_{0.7}O₃) 273750-96-2, Lead lutetium niobium

titanium oxide (PbLu0.1Nb0.1Ti0.8O3)

RL: PRP (Properties)

(prepn. and properties of ferroelec. ceramics and
films of lead lanthanide niobate titanate)

REFERENCE COUNT: 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR
THIS RECORD. ALL CITATIONS AVAILABLE IN
THE RE FORMAT

L11 ANSWER 6 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2003:498131 HCAPLUS

DOCUMENT NUMBER: 139:205805

TITLE: Dielectric and transverse piezoelectric
properties of sol-gel-derived (001)
Pb[Yb1/2Nb1/2]O3-PbTiO3 epitaxial thin films

AUTHOR(S): Zhou, Q. F.; Zhang, Q. Q.; Yoshimura, T.;
Trolrier-McKinstry, S.

CORPORATE SOURCE: Materials Research Institute, The Pennsylvania
State University, University Park, PA, 16802,
USA

SOURCE: Applied Physics Letters (2003), 82(26),
4767-4769

CODEN: APPLAB; ISSN: 0003-6951

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB (1-X)Pb[Yb1/2Nb1/2]O3-xPbTiO3 (PYbN-PT, x=0.5) epitaxial thin films
were deposited on (001) SrRuO3/(001) MgO substrates by sol-gel
processing. X-ray diffraction anal. revealed that the films were
pyrochlore-free (001) epitaxial films when crystd. at 750°C
for 1 min. The dielec. permittivity and loss factor varied only
slightly with frequency in the range of 100 to 10 000 Hz. At 1 kHz,
the dielec. permittivity was 870 and the dielec. loss was 0.03 at
room temp. Compared with (111) PYbN-PT films, (001) PYbN-PT
films exhibited better ferroelec. and piezoelec.
properties. The remanent polarization (Pr) was 37 µC/cm2. The
effective transverse piezoelec. e31,f coeff. of the films were -10.2
C/m2 when films were poled at room temp. Enhanced piezoelec.
properties were obtained using unique two-step method poling the
PYbN-PT films at higher temps.

IT 170965-44-3P, Lead niobium titanium ytterbium oxide

PbNb0.25Ti0.5Yb0.25O3

RL: PNU (Preparation, unclassified); PRP (Properties); PREP
(Preparation)

(dielec. and transverse piezoelec. properties of sol-gel-derived
(001) Pb[Yb1/2Nb1/2]O3-PbTiO3 epitaxial thin films)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

IT 170965-44-3P, Lead niobium titanium ytterbium oxide
PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃RL: PNU (Preparation, unclassified); PRP (Properties); PREP
(Preparation)(dielec. and transverse piezoelec. properties of sol-gel-derived
(001) Pb[Yb_{1/2}Nb_{1/2}]O₃-PbTiO₃ epitaxial thin films)REFERENCE COUNT: 21 THERE ARE 21 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L11 ANSWER 7 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:719507 HCAPLUS

DOCUMENT NUMBER: 138:116004

TITLE: Growth and piezoelectric properties of
Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ epitaxial films

AUTHOR(S): Yoshimura, Takeshi; Trolier-McKinstry, Susan

CORPORATE SOURCE: Materials Research Institute, The Pennsylvania
State University, University Park, PA, 16802,
USASOURCE: Journal of Applied Physics (2002), 92(7),
3979-3984

CODEN: JAPIAU; ISSN: 0021-8979

PUBLISHER: American Institute of Physics

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Epitaxial films of (1-x)Pb(Yb_{1/2}Nb_{1/2})O₃-xPbTiO₃ (PYbN-PT, x=0.4,0.5) with SrRuO₃ bottom electrodes were prepd. on (100)LaAlO₃, (100)SrTiO₃, and (111)SrTiO₃ substrates by pulsed laser deposition. It was found that vacuum annealing of the SrRuO₃ before the deposition of PYbN-PT facilitated growth of perovskite PYbN-PT. With optimized growth conditions, (001) and (111) PYbN-PT epitaxial films with good phase purity were obtained in a range of 650-660 and 600-620°C, resp. The ferroelec. and transverse piezoelec. properties of these PYbN-PT films were investigated. In the (001) PYbN-PT (50/50) film, the highest remanent polarization (.apprx.30 µC/cm²) and e_{31,f} piezoelec. coeff. (-14 C/m²) were obsd. The transition temp. of the (001) PYbN-PT (50/50) film was near 380°C.

IT 170965-40-9, Lead niobium titanium ytterbium oxide
PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃ 170965-44-3, Lead niobium titanium
ytterbium oxide PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)(growth and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃
epitaxial films)

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

ST lead ytterbium niobium titanium oxide epitaxial film
piezoelectricity ferroelectricity

IT Annealing

Dielectric constant

Dielectric hysteresis

Dielectric loss

Dielectric polarization

Epitaxial films

Ferroelectric films

Ferroelectricity

Piezoelectricity

(growth and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃
epitaxial films)

IT 170965-40-9, Lead niobium titanium ytterbium oxide

PbNb0.3Ti0.4Yb0.3O3 170965-44-3, Lead niobium titanium

ytterbium oxide PbNb0.25Ti0.5Yb0.25O3

RL: PEP (Physical, engineering or chemical process); PRP.

(Properties); PYP (Physical process); PROC (Process)

(growth and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃
epitaxial films)

REFERENCE COUNT:

31

THERE ARE 31 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L11 ANSWER 8 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2002:321346 HCAPLUS
 DOCUMENT NUMBER: 137:55601
 TITLE: Structure and piezoelectric properties of
 sol-gel-derived 0.5 Pb[Yb1/2Nb1/2]O3-0.5 PbTiO3
 thin films
 AUTHOR(S): Zhang, Q. Q.; Zhou, Q. F.; Trolier-McKinstry, S.
 CORPORATE SOURCE: Geospace Research Incorporated, El Segundo, CA,
 90245, USA
 SOURCE: Applied Physics Letters (2002), 80(18),
 3370-3372
 CODEN: APPLAB; ISSN: 0003-6951
 PUBLISHER: American Institute of Physics
 DOCUMENT TYPE: Journal
 LANGUAGE: English
 AB 0.5 Pb[Yb1/2Nb1/2]O3-0.5 PbTiO3 thin films were deposited on (111)
 Pt/Ti/SiO2/Si substrates by sol-gel processing using a thin
 Pb(Zr0.52Ti0.48)O3 seed layer. X-ray diffraction anal. and SEM
 revealed that the films were strongly (111) oriented, mimicking the
 orientation of the (111) Pt/Ti/SiO2/Si substrate. No pyrochlore
 phase was obsd. by x-ray diffraction and the films had a uniform
 grain size of about 50-60 nm. The dielec. permittivity and loss
 factor varied only slightly with frequency in the range of 100-10000
 Hz. At 1 kHz, the dielec. permittivity was 1025 and dielec. loss
 was 0.028. The films exhibited good ferroelec.
 and piezoelec. properties. The remanent polarization (Pr) was 30
 $\mu\text{C}/\text{cm}^2$. The effective transverse piezoelec. $e_{31,f}$ coeff. of the
 films was measured using a modified wafer flexure method.
 IT 170965-44-3, Lead niobium titanium ytterbium oxide
 (PbNb0.25Ti0.5Yb0.25O3)
 RL: PRP (Properties)
 (structure and piezoelec. properties of sol-gel-derived 0.5
 Pb[Yb1/2Nb1/2]O3-0.5 PbTiO3 thin films
 (PbYb1/2Nb1/2O3)0.5(PbTiO3)0.5)
 RN 170965-44-3 HCAPLUS
 CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)
 IT 170965-44-3, Lead niobium titanium ytterbium oxide
 (PbNb0.25Ti0.5Yb0.25O3)
 RL: PRP (Properties)
 (structure and piezoelec. properties of sol-gel-derived 0.5
 Pb[Yb1/2Nb1/2]O3-0.5 PbTiO3 thin films

(PbYb1/2Nb1/2O3)0.5(PbTiO3)0.5)

REFERENCE COUNT: 15 THERE ARE 15 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L11 ANSWER 9 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2001:420596 HCAPLUS

DOCUMENT NUMBER: 135:130560

TITLE: Fatigue anisotropy in pulsed laser deposited
PYbN-PT thin films

AUTHOR(S): Bornand, Veronique; Trolhier-McKinstry, Susan

CORPORATE SOURCE: Laboratoire de Physicochimie de la Matiere
Condensee, CNRS UMR 5617, Montpellier, 34095,
Fr.

SOURCE: Annales de Chimie (Paris, France) (2001), 26(1),
141-144

CODEN: ANCPAC; ISSN: 0151-9107

PUBLISHER: Editions Scientifiques et Medicales Elsevier

DOCUMENT TYPE: Journal

LANGUAGE: English

AB Heterostructures consisting of a (100) LaAlO3 (LAO) or (111) SrTiO3
(STO) substrate, a SrRuO3 (SRO) metallic oxide bottom electrode, and
a (1-x)Pb[Yb1/2Nb1/2]O3-x PbTiO3 (PYbN-PT, x .apprx. 0.5 or 0.6)
ferroelec. thin film were grown by the pulsed
laser deposition process. The films were perovskite structured,
with orientations that ranged from highly <001>pc-
oriented PYbN-PT/SRO/LAO to highly <111>pc-oriented
PYbN-PT/SRO/STO multilayer systems. According to the crystal
orientation, the ferroelec. and fatigue characteristics of such
as-grown planar capacitors vary significantly. In particular,
<001>pc-heteroepitaxial thin films result in
fatigue-free capacitors up to 1011 cycles while
<111>pc-oriented heterostructures exhibit a marked
degrdn. of the switchable polarization by a.c. voltage cycling.
These data agree with recent findings of fatigue anisotropy in
relaxor ferroelec.-PbTiO3 single crystals. This orientation
dependence may result from differences in the domain configuration
and switching process.

IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb0.25Ti0.5Yb0.25O3) 170965-48-7, Lead niobium titanium
ytterbium oxide (PbNb0.2Ti0.6Yb0.2O3)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); TEM (Technical or engineered material use); PROC
(Process); USES (Uses)

(fatigue anisotropy in pulsed laser deposited lead niobium
titanium ytterbium oxide thin films)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number

O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 170965-48-7 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Yb	0.2	7440-64-4
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) 170965-48-7, Lead niobium titanium
ytterbium oxide (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); TEM (Technical or engineered material use); PROC
(Process); USES (Uses)

(fatigue anisotropy in pulsed laser deposited lead niobium
titanium ytterbium oxide thin films)

REFERENCE COUNT: 11 THERE ARE 11 CITED REFERENCES AVAILABLE
FOR THIS RECORD. ALL CITATIONS AVAILABLE
IN THE RE FORMAT

L11 ANSWER 10 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN

ACCESSION NUMBER: 2000:400121 HCAPLUS

DOCUMENT NUMBER: 133:186229

TITLE: Phase development in pulsed laser deposited
Pb[Yb_{0.5}Nb_{0.5}]O₃-PbTiO₃ thin films

AUTHOR(S): Bornand, V.; Trolrier-McKinstry, S.

CORPORATE SOURCE: Materials Research Laboratory, Department of
Materials Science and Engineering, The
Pennsylvania State University, University Park,
PA, 16802-4801, USA

SOURCE: Thin Solid Films (2000), 370(1,2), 70-77
CODEN: THSFAP; ISSN: 0040-6090

PUBLISHER: Elsevier Science S.A.

DOCUMENT TYPE: Journal

LANGUAGE: English

AB (1-X)Pb[Yb_{0.5}Nb_{0.5}]O₃ - xPbTiO₃ (PYbN-PT, x = 0.4 and 0.5)/SrRuO₃
(SRO) heterostructures have been prepd. by pulsed laser deposition
(PLD) on <100>pc-oriented LaAlO₃ (LAO) substrates
(the subscript pc refers here to the pseudo-cubic perovskite)

subcell). Careful control of both lead volatilization and pyrochlore formation during the growth appears to be essential to obtain perovskite PYbN-PT thin films with good cryst., elec. and ferroelec. properties. By utilizing PbO-enriched ceramic targets and adjusting deposition parameters such as the laser frequency, the chamber pressure, the target to substrate distance and/or the substrate temp., high-quality thin films can be successfully grown with a single out-of-plane <001>pc orientation and an in-plane heteroepitaxial arrangement of [110]pc PYbN-PT // [110]pc. SrRuO₃. When processed in the 560 - 660° temp. range, with a dynamic O₃/O₂ pressure of 300 - 400 mTorr and relatively high laser repetition rates, PYbN-PT films exhibit improved ferroelec. properties. The typical values of the remanent (Pr) and satn. (Ps) polarizations increase up to 50 and 80 μC/cm², resp.

IT 170965-40-9, Lead niobium titanium ytterbium oxide
(PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) 170965-44-3, Lead niobium titanium
ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
(ceramic thin film; phase development in pulsed laser deposited)
RN 170965-40-9 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)
Section cross-reference(s): 56, 57, 75, 77
IT Ferroelectric films
(Pb[Yb_{0.5}Nb_{0.5}]O₃-PbTiO₃; phase development in pulsed laser
deposited)

IT 12034-65-0, Lead niobium ytterbium oxide (PbNb0.5Yb0.5O3)
 12060-00-3, Lead titanium oxide (PbTiO3) 170965-40-9, Lead
 niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3)
 170965-44-3, Lead niobium titanium ytterbium oxide
 (PbNb0.25Ti0.5Yb0.25O3)
 RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PROC (Process)
 (ceramic thin film; phase development in pulsed laser deposited)
 REFERENCE COUNT: 28 THERE ARE 28 CITED REFERENCES AVAILABLE
 FOR THIS RECORD. ALL CITATIONS AVAILABLE
 IN THE RE FORMAT

L11 ANSWER 11 OF 11 HCAPLUS COPYRIGHT 2006 ACS on STN
 ACCESSION NUMBER: 2000:178150 HCAPLUS
 DOCUMENT NUMBER: 132:287188
 TITLE: Phase transitions and properties of perovskite
 ferroelectric ceramics and films
 for certain applications
 AUTHOR(S): Sternberg, A.; Birks, E.; Shebanovs, L.;
 Klotins, E.; Ozolinsh, M.; Tyunina, M.; Zauls,
 V.; Kundzinsh, M.
 CORPORATE SOURCE: Institute of Solid State Physics, University of
 Latvia, Riga, LV-1063, Latvia
 SOURCE: Ferroelectrics (1999), 226(1-4), 217-241
 CODEN: FEROA8; ISSN: 0015-0193
 PUBLISHER: Gordon & Breach Science Publishers
 DOCUMENT TYPE: Journal
 LANGUAGE: English

AB The structure-properties relations and phase transitions in
 perovskite ceramics, and films of PLZT, PLZST, PST, PSN, PMNT
 compds. are discussed with regard to ordering, relaxor behavior,
 pronounced ferroelec., electromech. and electrocaloric properties.
 The theor. approach is extended to the time dependent
 Ginsburg-Landau model. The evolution of dielec. properties in
 relaxors after the change of temp. and elec. field creating an
 increase of dielec. permittivity is found to follow a logarithmic
 law of decay. A strong electromech. response is obsd. in a no. of
 thin films of different compns.

IT 263871-47-2, Lead lutetium niobium titanium oxide
 (PbLu0-0.5Nb0-0.5Ti0-1O3)
 RL: PRP (Properties)
 (phase transitions and properties of perovskite ferroelec
 . ceramics and films for certain applications)
 RN 263871-47-2 HCAPLUS
 CN Lead lutetium niobium titanium oxide (PbLu0-0.5Nb0-0.5Ti0-1O3) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Ti	0 - 1	7440-32-6

Nb	0 - 0.5	7440-03-1
Lu	0 - 0.5	7439-94-3
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57

IT Ferroelectric materials

(ceramic; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT Annealing

(effect of; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT Electromechanical effect

Phase diagram

Phase transition

Piezoelectricity

Strain

(phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 114756-07-9, Lanthanum lead titanium zirconium oxide

(La_{0.04}Pb_{0.96}Ti_{0.35}Zr_{0.65}O₃)

RL: PRP (Properties)

(PLZT 4/65/35, PLZT 4.5/65/35; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 127814-44-2, Lanthanum lead titanium zirconium oxide

(La_{0.05}Pb_{0.95}Ti_{0.35}Zr_{0.65}O₃)

RL: PRP (Properties)

(PLZT 5/65/35; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 114756-04-6, Lanthanum lead titanium zirconium oxide

(La_{0.06}Pb_{0.94}Ti_{0.35}Zr_{0.65}O₃)

RL: PRP (Properties)

(PLZT 6/65/35, PLZT 6.5/65/35; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 111592-97-3, Lanthanum lead titanium zirconium oxide

(La_{0.08}Pb_{0.92}Ti_{0.3}Zr_{0.70}O₃)

RL: PRP (Properties)

(PLZT 8.3/70/30; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 115709-79-0, PLZT 10/65/35

RL: PRP (Properties)

(PLZT 9.75/65/35; phase transitions and properties of perovskite **ferroelec.** ceramics and **films** for certain applications)

IT 210289-14-8, Lead magnesium niobium titanium oxide

(PbMg_{0.22}Nb_{0.46}Ti_{0.32}O₃)

RL: PRP (Properties)
 (PMNT 68/32; phase transitions and properties of perovskite ferroelec. ceramics and films for certain applications)

IT 153039-90-8, Lead niobium scandium titanium oxide (PbNb0.29Sc0.29Ti0.42O3)
 RL: PRP (Properties)
 (PSNT 58/42; phase transitions and properties of perovskite ferroelec. ceramics and films for certain applications)

IT 12586-31-1, Neutron
 RL: NUU (Other use, unclassified); USES (Uses)
 (effect of irradiation by; phase transitions and properties of perovskite ferroelec. ceramics and films for certain applications)

IT 12034-64-9, Lead niobium scandium oxide pbnb0.5sc0.5o3 12036-91-8, Lead scandium tantalum oxide pbsc0.5ta0.5o3 106605-77-0, PZT 65/35 110640-27-2, PLZT 8/65/35 118956-68-6, Lanthanum lead titanate la0.08pb0.88tio3 193402-53-8, Lead niobium tin titanium zirconium oxide pb0.98Nb0.02Sn0.2Ti0.05Zr0.75O3 263871-47-2, Lead lutetium niobium titanium oxide (PbLu0-0.5Nb0-0.5Ti0-1O3)
 RL: PRP (Properties)
 (phase transitions and properties of perovskite ferroelec. ceramics and films for certain applications)

IT 1309-48-4, Magnesium oxide, uses 7440-06-4, Platinum, uses 7440-21-3, Silicon, uses 13463-67-7, Titania, uses 107539-20-8, Barium copper yttrium oxide 108658-67-9, Copper lanthanum strontium oxide
 RL: NUU (Other use, unclassified); USES (Uses)
 (substrate; phase transitions and properties of perovskite ferroelec. ceramics and films for certain applications)

REFERENCE COUNT: 34 THERE ARE 34 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

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L20 ANSWER 1 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 2005:143608 Document No. 143:357963 Crystal growth of relaxor ferroelectric solid solution single crystals near a morphotropic phase boundary with high Curie temperature and some properties. Yasuda, N.; Itoh, Y.; Ohwa, H.; Yamashita, Y.; Iwata, M.; Ishibashi, Y. (Electrical & Electronic Engineering Department, Gifu University, Gifu, 501-1193, Japan). Transactions of the Materials Research Society of Japan, 29(4), 1359-1364 (English) 2004. CODEN: TMRJE3. ISSN: 1382-3469. Publisher: Materials Research Society of Japan.

AB The Pb(In1/2Nb1/2)O3-PbTiO3 [PIN-PT] and Pb(Yb1/2Nb1/2)O3-PbTiO3 [PYN-PT] binary system single crystals near the morphotropic phase boundary [MPB] compn. with pseudo-cubic (100) planes were grown by

the conventional flux method using PbO-PbF₂-B₂O₃ flux. The PIN-PT single crystal near the MPB grown along <110> direction was obtained by the soln. Bridgman method using PbO-B₂O₃ flux. The PIN single crystals undergo successively a decompn. at 1254°, and a peritectic melting at 1399° upon heating. The PIN-PT(72/28) and PYN-PT(47/53) single crystals show a peritectic m.p. at 1283 and 1205°, resp. with a partial decompn. of the perovskite crystal into pyrochlore one, followed by a liquidus point at 1294 and 1253°, resp. The stability of the perovskite phase, in PIN and PYN-PT crystals is enhanced with solid soln. with PT. The Curie temp. of PIN-PT(72/28) and PYN-PT(47/53) single crystals are 276 and 404°, resp. The electromech. coupling coeff. in rectangular bar mode, $k_{33}' = 78\%$, of PIN-PT(72/28) single crystal for phased array ultrasonic transducers was obtained along <001> axis in the rhombohedral phase, which is independent of temp., and at 200° decreases by 5%.

IT 170965-48-7, Lead niobium titanium ytterbium oxide
(PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃) 380405-46-9, Lead niobium titanium
ytterbium oxide (PbNb_{0.24}Ti_{0.53}Yb_{0.24}O₃)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)
(crystal growth of relaxor **ferroelec.** solid soln.
single crystals near morphotropic phase boundary with high Curie
temp. and their structural and thermal properties)
RN 170965-48-7 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.2	7440-64-4
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 380405-46-9 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb_{0.24}Ti_{0.53}Yb_{0.24}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.53	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)
ST lead indium niobate titanate relaxor **ferroelec** crystal

- growth; ytterbium lead niobate titanate relaxor **ferroelec**
crystal growth
- IT Bridgman crystal growth
Curie temperature (**ferroelectric**)
Piezoelectricity
Relaxor **ferroelectrics**
Thermal stability
(crystal growth of relaxor **ferroelec.** solid soln.
single crystals near morphotropic phase boundary with high Curie
temp. and their structural and thermal properties)
- IT 170965-48-7, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.2}\text{Ti}_{0.6}\text{Yb}_{0.2}\text{O}_3$) 208596-15-0, Indium lead niobium titanium
oxide ($\text{In}_{0.36}\text{PbNb}_{0.36}\text{Ti}_{0.28}\text{O}_3$) 380405-46-9, Lead niobium
titanium ytterbium oxide ($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$) 503274-45-1,
Indium lead niobium titanium oxide ($\text{In}_{0.32}\text{PbNb}_{0.32}\text{Ti}_{0.37}\text{O}_3$)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)
(crystal growth of relaxor **ferroelec.** solid soln.
single crystals near morphotropic phase boundary with high Curie
temp. and their structural and thermal properties)
- L20 ANSWER 2 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
2004:345015 Document No. 141:358902 Effect of Zr substitution on
structural and dielectric properties of $\text{Pb}_5\text{EuTi}_3\text{-xZrNb}_7\text{O}_{30}$ ($x = 0$,
1, 2 and 3) **ferroelectric** ceramics. Singh, Alok K.;
Choudhary, R. N. P. (Department of Physics and Meteorology, Indian
Institute of Technology, Kharagpur, 721302, India). Journal of
Materials Science: Materials in Electronics, 15(6), 379-384
(English) 2004. CODEN: JSMEEV. ISSN: 0957-4522. Publisher: Kluwer
Academic Publishers.
- AB The polycryst. samples of $\text{Pb}_5\text{EuTi}_3\text{-xZrNb}_7\text{O}_{30}$ ($x = 0$, 1, 2 and 3)
were prep'd. by a high-temp. solid-state reaction technique.
Formation of the compds. was checked by X-ray diffraction method.
All the compds. were found to have orthorhombic structure at room
temp. Studies of their dielec. const. (ϵ) as a function of temp.
(25-375 °C) at 10 kHz exhibit **ferroelec.** phase
transition of a diffuse-type. With increasing Zr concn. (x),
transition temp. (T_c) as well as dielec. const. decreases. Temp.
variation of d.c. resistivity/cond. shows that these compds. exhibit
neg. temp. coeff. of resistance in the high temp. range.
- IT 624715-50-0P, Europium lead niobium titanium oxide
($\text{EuPb}_5\text{Nb}_7\text{Ti}_3\text{O}_{30}$) 775355-41-4P, Europium lead niobium
zirconium oxide ($\text{EuPb}_5\text{Nb}_7\text{Zr}_3\text{O}_{30}$)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); SPN (Synthetic preparation);
PREP (Preparation); PROC (Process)
(effect of Zr substitution on structural and dielec. properties
of $\text{Pb}_5\text{EuTi}_3\text{-xZrNb}_7\text{O}_{30}$ ($x = 0$, 1, 2 and 3) **ferroelec.**
ceramics)
- RN 624715-50-0 HCAPLUS
CN Europium lead niobium titanium oxide ($\text{EuPb}_5\text{Nb}_7\text{Ti}_3\text{O}_{30}$) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Eu	1	7440-53-1
Ti	3	7440-32-6
Nb	7	7440-03-1
Pb	5	7439-92-1

RN 775355-41-4 HCAPLUS

CN Europium lead niobium zirconium oxide (EuPb5Nb7Zr3O30) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Zr	3	7440-67-7
Eu	1	7440-53-1
Nb	7	7440-03-1
Pb	5	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

ST europium lead titanate zirconate niobate **ferroelec**
structure dielec const

IT Calcination

Crystal structure-property relationship

Curie temperature (**ferroelectric**)

Dielectric constant

Dielectric loss

Electric conductivity

Ferroelectric transition

Microstructure

(effect of Zr substitution on structural and dielec. properties
of Pb5EuTi3-xZrxNb7O30 (x = 0, 1, 2 and 3) **ferroelec.**
ceramics)

IT 624715-50-0P, Europium lead niobium titanium oxide
(EuPb5Nb7Ti3O30) 775355-39-0P 775355-40-3P 775355-41-4P

, Europium lead niobium zirconium oxide (EuPb5Nb7Zr3O30)

RL: PEP (Physical, engineering or chemical process); PRP

(Properties); PYP (Physical process); SPN (Synthetic preparation);

PREP (Preparation); PROC (Process)

(effect of Zr substitution on structural and dielec. properties
of Pb5EuTi3-xZrxNb7O30 (x = 0, 1, 2 and 3) **ferroelec.**
ceramics)

IT 1308-96-9, Europium oxide 1313-96-8, Niobium pentoxide

1314-23-4, Zirconia, reactions 1317-36-8, Lead monoxide, reactions

13463-67-7, Titania, reactions

RL: RCT (Reactant); RACT (Reactant or reagent)

(effect of Zr substitution on structural and dielec. properties

of $\text{Pb}_5\text{EuTi}_3\text{-xZrxNb}_7\text{O}_{30}$ ($x = 0, 1, 2$ and 3) ferroelec. ceramics)

L20 ANSWER 3 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
 2004:248632 Document No. 141:62935 **Ferroelectric** phase transition in $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$ ($R = \text{Eu}$ and Gd) ceramics. Singh, A. K.; Choudhary, R. N. P. (Department of Physics and Meteorology, Indian Institute of Technology, Kharagpur, 721302, India). Journal of Materials Science, 39(8), 2873-2876 (English) 2004. CODEN: JMTSAS. ISSN: 0022-2461. Publisher: Kluwer Academic Publishers.
 AB The compds $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$ ($R = \text{Eu}$ and Gd) have an orthorhombic structure at room temp. These compds. show a diffuse-type ferroelec. phase transition with a transition temp. well above room temp. The authors also obsd. low activation temp. and decreasing resistance with rise in temp., which indicates the intrinsic semiconductor character of the materials.
 IT 705942-12-7, Europium lead niobium titanium oxide ($\text{Eu}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$) 705942-19-4, Gadolinium lead niobium titanium oxide ($\text{Gd}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$)
 RL: PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process)
 (ferroelec. phase transition in $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$ ($R = \text{Eu}$ and Gd) ceramics)
 RN 705942-12-7 HCAPLUS
 CN Europium lead niobium titanium oxide ($\text{Eu}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Eu	3	7440-53-1
Ti	5	7440-32-6
Nb	5	7440-03-1
Pb	3	7439-92-1

RN 705942-19-4 HCAPLUS
 CN Gadolinium lead niobium titanium oxide ($\text{Gd}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Gd	3	7440-54-2
Ti	5	7440-32-6
Nb	5	7440-03-1
Pb	3	7439-92-1

CC 76-8 (Electric Phenomena)
 ST ferroelec phase transition lead europium titanate niobate ceramics; gadolinium lead titanate niobate ceramics

- ferroelec phase transition**
- IT **Ferroelectric materials**
(ceramic; ferroelec. phase transition in $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$
(R = Eu and Gd) ceramics)
- IT **Ferroelectric transition**
(ferroelec. phase transition in $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$ (R = Eu
and Gd) ceramics)
- IT **705942-12-7, Europium lead niobium titanium oxide**
($\text{Eu}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$) **705942-19-4, Gadolinium lead niobium**
titanium oxide ($\text{Gd}_3\text{Pb}_3\text{Nb}_5\text{Ti}_5\text{O}_{30}$)
RL: PEP (Physical, engineering or chemical process); PYP (Physical
process); PROC (Process)
(ferroelec. phase transition in $\text{Pb}_3\text{R}_3\text{Ti}_5\text{Nb}_5\text{O}_{30}$ (R = Eu
and Gd) ceramics)
- L20 ANSWER 4 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
2004:109640 Document No. 141:182791 Characterization of high Curie
temperature piezocrystals in doped $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ system.
Zhang, Shujun; Randall, Clive A.; Shrout, Thomas R. (Material
Research Institute, Pennsylvania State University, University Park,
PA, 16802, USA). Ceramic Transactions, 150 (Ceramic Materials and
Multilayer Electronic Devices), 149-156 (English) 2004. CODEN:
CETREW. ISSN: 1042-1122. Publisher: American Ceramic Society.
- AB The industrial and scientific communities have expressed a real need
for the capability of actuators and transducers at elevated temps.
 $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$ (PZNT) and $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$ (PMNT)
single crystals attracted many attentions in the last 2 decades
because of their ultrahigh piezoelec. and electromech. properties
compared to com. $\text{Pb}(\text{ZrxTi}_{1-x})\text{O}_3$ (PZT) ceramic, but the applications
were limited owing to their low Curie temp. (T_c). Attempts to grow
high T_c piezoelec. single crystals in the $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$
(PYNT) systems were explored. The Zn-doped PYNT single crystals
possess similar T_c ($\approx 325^\circ$) but much higher
rhombohedral to tetragonal phase transition temp. ($T_r\text{-}t$)
($\approx 212^\circ$) compared to the Ba-doped one
($\approx 160^\circ$). The detailed dielec. and piezoelec.
properties were reported for Zn-doped PYNT single crystals and
compared to the Ba-doped PYNT in this paper.
- IT **170965-41-0, Lead niobium titanium ytterbium oxide**
($\text{PbNb}_{0.28}\text{Ti}_{0.45}\text{Yb}_{0.28}\text{O}_3$)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)
(characterization of high Curie temp. piezocrystals in Ba- and
Zn-doped $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ system)
- RN 170965-41-0 HCAPLUS
- CN Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.28}\text{Ti}_{0.45}\text{Yb}_{0.28}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2

Yb	0.28	7440-64-4
Ti	0.45	7440-32-6
Nb	0.28	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

ST zinc doped lead ytterbium niobate titanate **ferroelec** Curie temp

IT Curie temperature (**ferroelectric**)

Dielectric constant

Piezoelectric materials

(characterization of high Curie temp. piezocrystals in Ba- and Zn-doped $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ system)

IT 170965-41-0, Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.28}\text{Ti}_{0.45}\text{Yb}_{0.28}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(characterization of high Curie temp. piezocrystals in Ba- and Zn-doped $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ system)

L20 ANSWER 5 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:675334 Document No. 140:330372 High Curie temperature, high performance perovskite single crystals in the $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ and $\text{BiScO}_3\text{-PbTiO}_3$ systems. Zhang, Shujun; Lebrun, Laurent; Randall, Clive A.; Shrout, Thomas R. (Material Research Institute, Pennsylvania State University, University Park, PA, 16802, USA). Ceramic Transactions, 136 (Morphotropic Phase Boundary Pervskites, High Strain Piezoelectrics, and Dielectric Ceramics), 85-93 (English) (2003). CODEN: CETREW. ISSN: 1042-1122. Publisher: American Ceramic Society.

AB $\text{Pb}(\text{Zn}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$ (PZNT) and $\text{Pb}(\text{Mg}_{1/3}\text{Nb}_{2/3})\text{O}_3\text{-PbTiO}_3$ (PMNT) single crystals are promising candidates for transducers and actuators owing to their high piezoelec. properties. However, their implementation is greatly limited by their low Curie temp. ($T_c \approx 150\text{-}170^\circ$), which are further limited by **ferroelec.** phase transition temp. ($T_r\text{-}t \approx 80\text{-}120^\circ$). Attempts to grow crystals of high T_c piezoelec. in the $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{PbTiO}_3$ (PYNT) and $\text{BiScO}_3\text{-PbTiO}_3$ (BSPT) systems were explored. The T_c of the PYNT near the morphotropic phase boundary (MPB) compn. was found to be $\approx 350^\circ$, with properties comparable to PZNT and PMNT single crystals. He T_c of tetragonal BSPT single crystals near the MPB was $\approx 460^\circ$ with a thickness mode electromech. coupling factor k_t of 60-64%. The coercive fields of both crystals are significantly larger than PZNT and PMNT single crystals, reflecting better domain stability.

IT 170965-40-9, Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{Yb}_{0.3}\text{O}_3$) 170965-41-0, Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.28}\text{Ti}_{0.45}\text{Yb}_{0.28}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(high Curie temp., high performance perovskite single crystals in

Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ and BiScO₃-PbTiO₃ systems)

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-41-0 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.28}Ti_{0.45}Yb_{0.28}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.28	7440-64-4
Ti	0.45	7440-32-6
Nb	0.28	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

ST lead ytterbium niobate titanate dielec piezoelec **ferroelec**
property; bismuth scandium lead titanate dielec piezoelec
ferroelec property

IT Dielectric constant

Dielectric loss

Ferroelectricity

Piezoelectricity

(of high Curie temp., high performance perovskite single crystals
in Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ and BiScO₃-PbTiO₃ systems)

IT 170965-40-9, Lead niobium titanium ytterbium oxide
(PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) 170965-41-0, Lead niobium titanium
ytterbium oxide (PbNb_{0.28}Ti_{0.45}Yb_{0.28}O₃) 677768-07-9, Bismuth lead
scandium titanium oxide

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)

(high Curie temp., high performance perovskite single crystals in
Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ and BiScO₃-PbTiO₃ systems)

L20 ANSWER 6 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:639781 Document No. 139:253499 Dielectric relaxation in the
Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ solid solution single crystal near the
morphotropic phase boundary. Yasuda, Naohiko; Inaba, Hiroaki; Ohwa,
Hidehiro; Iwata, Makoto; Terauchi, Hikaru; Ishibashi, Yoshihiro
(Electrical and Electronic Engineering Department, Gifu University,

501-1193, Japan). Applied Physics Letters, 83(7), 1409-1410
(English) **2003** CODEN: APPLAB. ISSN: 0003-6951. Publisher:
American Institute of Physics.

AB The dielec. properties in $0.47\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - 0.53PbTiO_3
(0.47PYN - 0.53PT) single crystals near the morphotropic phase
boundary (MPB) were investigated in the frequency range from 10 kHz
to 1 MHz. Remarkable dielec. relaxation was obsd. along the polar
<001> direction in the tetragonal 0.47PYN - 0.53PT
single crystal near the MPB. An increase of the dielec. relaxation
time was obsd. as the Curie temp. was approached. The real part and
the imaginary part of the complex relative permittivity obeys the
Cole-Cole arc law, and the Debye type dielec. dispersion with the
polydispersive type among the order-disorder type **ferroelecs**
. was obsd.

IT **380405-46-9**, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$)

RL: PRP (Properties); TEM (Technical or engineered material use);
USES (Uses)

(relaxor **ferroelec.**; dielec. relaxation in
 $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 solid soln. single crystal near
morphotropic phase boundary)

RN **380405-46-9** HCAPLUS

CN Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.53	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

CC 76-9 (Electric Phenomena)

ST dielec relaxation lead ytterbium niobate titanate single crystal
ferroelec

IT Relaxor **ferroelectrics**

(lead ytterbium niobate titanate; dielec. relaxation in
 $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 solid soln. single crystal near
morphotropic phase boundary)

IT **380405-46-9**, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$)

RL: PRP (Properties); TEM (Technical or engineered material use);
USES (Uses)

(relaxor **ferroelec.**; dielec. relaxation in
 $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - PbTiO_3 solid soln. single crystal near
morphotropic phase boundary)

L20 ANSWER 7 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:600845 Document No. 139:389437 Diffuse **ferroelectrics**
phase transition in $\text{Pb}_5\text{RTi}_3\text{Nb}_7\text{O}_{30}$ (R=Eu and Gd). Singh, Alok K.;

Choudhary, R. N. P. (Department of Physics and Meteorology, Indian Institute of Technology, Kharagpur, 721302, India). Materials Letters, 57(24-25), 3722-3728 (English) (2003) CODEN: MLETDJ. ISSN: 0167-577X. Publisher: Elsevier Science B.V.

- AB The polycryst. complex tungsten-bronze (TB)-type compds. Pb₅R₂Ti₃Nb₇O₃₀ (R = Eu and Gd) were prepd. by a high-temp. solid-state technique. XRD study confirmed the formation of single-phase compds. in an orthorhombic structure at room temp. Detailed studies of dielec. const. (ϵ) and tangent loss ($\tan\delta$) of the above compds. as a function of temp. (room temp. (30°) to 350°) at 10 kHz exhibit a **ferroelec** phase transition of diffuse type. Temp. variation of resistivity shows that these compds. have neg. temp. coeff. of resistance (NTCR) at high temp.
- IT **624715-50-0**, Europium lead niobium titanium oxide (EuPb₅Nb₇Ti₃O₃₀) **624715-51-1**, Gadolinium lead niobium titanium oxide (GdPb₅Nb₇Ti₃O₃₀)
 RL: PRP (Properties)
 (diffuse **ferroelecs.** phase transition in Pb₅EuTi₃Nb₇O₃₀ and Pb₅GdTi₃Nb₇O₃₀)
- RN **624715-50-0** HCAPLUS
- CN Europium lead niobium titanium oxide (EuPb₅Nb₇Ti₃O₃₀) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Eu	1	7440-53-1
Ti	3	7440-32-6
Nb	7	7440-03-1
Pb	5	7439-92-1

- RN **624715-51-1** HCAPLUS
- CN Gadolinium lead niobium titanium oxide (GdPb₅Nb₇Ti₃O₃₀) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	30	17778-80-2
Gd	1	7440-54-2
Ti	3	7440-32-6
Nb	7	7440-03-1
Pb	5	7439-92-1

- CC 76-8 (Electric Phenomena)
- ST lear europium gadolinium titanate niobate tungsten bronze **ferroelec** transition
- IT Dielectric constant
 Dielectric loss
 Electric conductivity

Electric resistance

Ferroelectric transition

Molar volume

Phase transition

X-ray diffraction

(diffuse **ferroelecs.** phase transition in Pb5EuTi3Nb7O30 and Pb5GdTi3Nb7O30)

IT 624715-50-0, Europium lead niobium titanium oxide (EuPb5Nb7Ti3O30) 624715-51-1, Gadolinium lead niobium titanium oxide (GdPb5Nb7Ti3O30)

RL: PRP (Properties)

(diffuse **ferroelecs.** phase transition in Pb5EuTi3Nb7O30 and Pb5GdTi3Nb7O30)

L20 ANSWER 8 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:553218 Document No. 140:208405 Origin of polar domains in **ferroelectric** relaxor of perovskite oxides. Ahn, Sang-Jin; Kim, Jong-Jean; Kim, Jai-Hyun; Choo, Woong-Kil (Physics Department, Korea Advanced Institute of Science and Technology, Daejeon, 305-701, S. Korea). Journal of the Korean Physical Society, 42(Suppl. Issue, Proceedings of the 4th Japan-Korea Conference of Ferroelectrics, 2002), S1009-S1011 (English) 2003. CODEN: JKPSDV. ISSN: 0374-4884. Publisher: Korean Physical Society.

AB **Ferroelec.** relaxor has very interesting dielec. and electromech. properties of useful applications, where polar nanodomains play a crucial role. However, the origins of the nano polar domain formations in the cubic perovskite structures are not fully understood although a spin glass analog model and an extended random field model are in partial success. From the authors' exptl. data of electron diffraction and Raman scattering with a **ferroelec.** relaxor the **ferroelec.** relaxor has a localized flexoelectricity. The authors will then propose this flexoelectricity may be the origin of the polar nanodomains in the **ferroelec.** relaxors of cubic symmetry.

IT 170965-35-2, Lead niobium titanium ytterbium oxide (PbNb0.45Ti0.1Yb0.45O3) 170965-38-5, Lead niobium titanium ytterbium oxide (PbNb0.4Ti0.2Yb0.4O3)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)

(model for origin of polar domains in **ferroelec.** relaxor of perovskite oxides)

RN 170965-35-2 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.45Ti0.1Yb0.45O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.45	7440-64-4
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1

Pb | 1 | 7439-92-1

RN 170965-38-5 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.4}Ti_{0.2}Yb_{0.4}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.4	7440-64-4
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57, 75

ST **ferroelec** domain relaxor perovskite oxide model

IT **Ferroelectric** materials

(Perovskite-type crystals; model for origin of polar domains in
ferroelec. relaxor of perovskite oxides)

IT Perovskite-type crystals

(**ferroelec.**; model for origin of polar domains in
ferroelec. relaxor of perovskite oxides)

IT Electron diffraction

Ferroelectric domain

Flexoelectricity

Raman spectra

Relaxor **ferroelectrics**

Simulation and Modeling

(model for origin of polar domains in **ferroelec.**
relaxor of perovskite oxides)

IT Oxides (inorganic), properties

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)

(model for origin of polar domains in **ferroelec.**
relaxor of perovskite oxides)

IT 170965-35-2, Lead niobium titanium ytterbium oxide
(PbNb_{0.45}Ti_{0.1}Yb_{0.45}O₃) 170965-38-5, Lead niobium titanium
ytterbium oxide (PbNb_{0.4}Ti_{0.2}Yb_{0.4}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)

(model for origin of polar domains in **ferroelec.**
relaxor of perovskite oxides)

L20 ANSWER 9 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:466044 Document No. 139:156631 Brillouin scattering study on
polycrystalline relaxor **ferroelectrics**. Ko, Jae-Hyeon;
Kim, Do Han; Kojima, Seiji; Kim, Jai-Hyun; Choo, Woong Kil
(Institute of Materials Science, University of Tsukuba, Ibaraki,
305-8573, Japan). Japanese Journal of Applied Physics, Part 1:
Regular Papers, Short Notes & Review Papers, 42(5B), 3076-3079

(English) (2003.) CODEN: JAPNDE. Publisher: Japan Society of Applied Physics.

- AB Brillouin spectra of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ (PYN)-based relaxor **ferroelec.** ceramics were measured using a conventional tandem Fabry-Perot interferometer. The measured spectra were composed of a strong elastic peak and a broad doublet with a sharp cutoff at the high-frequency side. The broad doublet was attributed to the distributed Brillouin shift of the longitudinal acoustic mode owing to the scattering events at all scattering angles $0-180^\circ$ which is due to multiple reflections and refractions. From the sharp high-frequency cutoff of this band, which corresponds to the largest Brillouin shift of the backward scattering geometry, the av. longitudinal sound velocities are 4.22-4.33 km/s for PYN-based relaxor ceramics. Brillouin spectroscopy can be used to derive elastic properties of single crystals and ceramic samples in the GHz range, which will be important for high-frequency applications.
- IT 250679-55-1, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.34}\text{Yb}_{0.34}\text{Zr}_{0.33}\text{O}_3$)
RL: PRP (Properties)
(Brillouin effect on polycryst. relaxor **ferroelec.**)
- RN 250679-55-1 HCAPLUS
- CN Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.34}\text{Yb}_{0.34}\text{Zr}_{0.33}\text{O}_3$)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.33	7440-67-7
Yb	0.34	7440-64-4
Nb	0.34	7440-03-1
Pb	1	7439-92-1

- CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 57, 76
- ST lead niobate ytterbate polycryst relaxor **ferroelec** ceramic
Brillouin; niobium ytterbium lead oxide polycryst relaxor **ferroelec** ceramic Brillouin
- IT Relaxor **ferroelectrics**
(Brillouin effect on lead niobate ytterbate polycryst.)
- IT **Ferroelectric** apparatus
(ceramic; Brillouin effect on lead niobate ytterbate polycryst. relaxor)
- IT Brillouin effect
(on lead niobate ytterbate polycryst. relaxor **ferroelecs**.)
- IT 12034-65-0, Lead niobium ytterbium oxide ($\text{PbNb}_{0.5}\text{Yb}_{0.5}\text{O}_3$)
140906-05-4, Barium lead niobium ytterbium oxide ($\text{Ba}_{0.14}\text{Pb}_{0.86}\text{Nb}_{0.5}\text{Yb}_{0.5}\text{O}_3$) 250679-55-1, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.34}\text{Yb}_{0.34}\text{Zr}_{0.33}\text{O}_3$)

RL: PRP (Properties)
(Brillouin effect on polycryst. relaxor ferroelec.)

L20 ANSWER 10 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
2003:423551 Document No. 140:295512 Processing and Electrical
Properties of 0.5Pb(Yb1/2Nb1/2)O3-0.5PbTiO3 Ceramics. Duran,
Cihangir; Trolrier-McKinstry, Susan; Messing, Gary L. (Department of
Materials Science and Engineering, Materials Research Institute, The
Pennsylvania State University, University Park, PA, 16802, USA).
Journal of Electroceramics, 10(1), 47-55 (English) (2003) CODEN:
JOELFJ. ISSN: 1385-3449. Publisher: Kluwer Academic Publishers.
AB Pb(Yb1/2Nb1/2)O3-PbTiO3 ceramics at the morphotropic phase boundary
(50:50) were sintered by conventional and reactive methods to
≥95% theor. d. and grain sizes <10 μm. Excess PbO, added
to enhance the densification, resulted in PbO-based nonferroelec.
phases that degraded the elec. properties. Volatilization of excess
PbO by annealing the samples after sintering resulted in dense,
perovskite samples and excellent elec. properties. The best elec.
properties, obtained via reactive sintering, were a remanent
polarization, Pr, of 0.36 C/m2, a max. dielec. const. of 31,000 (at
the Tc = 371° and 1 kHz), a piezoelec. charge coeff., d33, of
508 pC/N, and an electromech. coupling coeff., k33, of 0.61.
IT 170965-44-3P, Lead niobium titanium ytterbium oxide
(PbNb0.25Ti0.5Yb0.25O3)
RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or
engineered material use); PREP (Preparation); USES (Uses)
(sintering and properties of)
RN 170965-44-3 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)
Section cross-reference(s): 57
ST lead niobate titanate ytterbate sintering **ferroelectricity**
dielec microstructure
IT **Ferroelectric** materials
(Perovskite-type crystals; of lead niobium titanium ytterbium
oxide)
IT **Ferroelectricity**
(coercive field; of lead niobium titanium ytterbium oxide)
IT Perovskite-type crystals
(**ferroelec.**; of lead niobium titanium ytterbium oxide)
IT Annealing

Curie temperature (ferroelectric)

Densification

Dielectric constant

Dielectric hysteresis

Dielectric loss

Grain size

Phase composition

Piezoelectricity

Sintering

(of lead niobium titanium ytterbium oxide)

IT **Ferroelectricity**

(remanent polarization; of lead niobium titanium ytterbium oxide)

IT **170965-44-3P**, Lead niobium titanium ytterbium oxide

($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$)

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(sintering and properties of)

L20 ANSWER 11 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2003:193222 Document No. 138:361062 Some new ceramics and thin films of $\text{Pb}(\text{B}_{3+}, \text{Nb})\text{TiO}_3$ - PbTiO_3 system. Shebanovs, Leonids; Sternberg, Andris; Zauls, Vismants; Krumins, Andris (Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia). Ferroelectrics, 267, 271-276 (English) **2002**. CODEN: FEROA8. ISSN: 0015-0193. Publisher: Taylor & Francis Ltd..

AB The structure, dielec., and electromech. properties of $(1-x)\text{Pb}(\text{B}_{3+}, \text{Nb})\text{TiO}_3$ - $x\text{PbTiO}_3$ binary systems ($\text{B} = \text{Lu}, \text{Er}, \text{Tm}, \text{Ho}$) are reported. High values of the electromech. coupling coeffs. $k_p = 0.66$, $k_t = 0.48$, $k_{31} = 0.36$ are attained in lead lutetium niobate titanate (PLuNT) near the morphotropic phase boundary (MPB) between the tetragonal P4mm and pseudomonoclinic phases at $x = 0.41$. The crystallog. features at the MPB are discussed with respect to electromech. properties. The heterovalent substitution of Pb^{2+} by La^{3+} either in both components or maintaining the PbTiO_3 unmodified shifts the MPB to the pseudomonoclinic M side of the phase diagram. The initial unmodified material "softens" - the coercive field E_c decreases up to 15.9 kV/cm in the first case and below 10 kV/cm in the second case; simultaneously, high values of max. polarization $P_m = 50.3 \mu\text{C}/\text{cm}^2$ and remnant polarization $P_r 40.3 \mu\text{C}/\text{cm}^2$ are characteristic. The films of PLuNT with compn. near the MPB formed by in-situ pulsed laser deposition onto $\text{LSCO}/(100)\text{MgO}$ exhibited ferroelec. behavior with $P_m 29 \mu\text{C}/\text{cm}^2$, $P_r 14 \mu\text{C}/\text{cm}^2$, $E_c 70 \text{ kV}/\text{cm}$. The zero-field dielec. permittivity $\epsilon = 300$ -450 at room temp., and demonstrates a relaxor-type broad peak around 350° .

IT **519045-66-0**, Erbium lead niobium titanium oxide ($\text{Er}_{0.5}\text{PbNb}_{0.5}\text{TiO}_3$) **519045-67-1**, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.5}\text{Nb}_{0.5}\text{TiO}_3$) **519045-68-2**, Lead niobium thulium titanium oxide ($\text{PbNb}_{0.5}\text{Tm}_{0.5}\text{TiO}_3$) **519045-69-3**, Holmium lead niobium titanium oxide ($\text{Ho}_{0.5}\text{PbNb}_{0.5}\text{TiO}_3$)

RL: PRP (Properties)

(structure, dielec., and electromech. properties of
(1-x)Pb(B3+,Nb)TiO3-xPbTiO3 binary ceramic systems)

RN 519045-66-0 HCAPLUS

CN Erbium lead niobium titanium oxide (Er0.5PbNb0.5TiO3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.5	7440-52-0
Ti	1	7440-32-6
Nb	0.5	7440-03-1
Pb	1	7439-92-1

RN 519045-67-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.5Nb0.5TiO3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	1	7440-32-6
Nb	0.5	7440-03-1
Lu	0.5	7439-94-3
Pb	1	7439-92-1

RN 519045-68-2 HCAPLUS

CN Lead niobium thulium titanium oxide (PbNb0.5Tm0.5TiO3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	1	7440-32-6
Tm	0.5	7440-30-4
Nb	0.5	7440-03-1
Pb	1	7439-92-1

RN 519045-69-3 HCAPLUS

CN Holmium lead niobium titanium oxide (Ho0.5PbNb0.5TiO3) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ho	0.5	7440-60-0
Ti	1	7440-32-6
Nb	0.5	7440-03-1

Pb | 1 | 7439-92-1

CC 76-8 (Electric Phenomena)

ST **ferroelec** ceramics lead rare earth niobate titanate

IT **Ferroelectric** materials
(ceramic; structure, dielec., and electromech. properties of
(1-x)Pb(B3+,Nb)TiO3-xPbTiO3 binary ceramic systems)

IT **Ferroelectricity**
(coercive field; structure, dielec., and electromech. properties
of (1-x)Pb(B3+,Nb)TiO3-xPbTiO3 binary ceramic systems)

IT 12060-00-3, Lead titanate 519045-66-0, Erbium lead niobium
titanium oxide (Er0.5PbNb0.5TiO3) 519045-67-1, Lead
lutetium niobium titanium oxide (PbLu0.5Nb0.5TiO3)
519045-68-2, Lead niobium thulium titanium oxide
(PbNb0.5Tm0.5TiO3) 519045-69-3, Holmium lead niobium
titanium oxide (Ho0.5PbNb0.5TiO3)

RL: PRP (Properties)
(structure, dielec., and electromech. properties of
(1-x)Pb(B3+,Nb)TiO3-xPbTiO3 binary ceramic systems)

L20 ANSWER 12 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2002:949565 Document No. 138:410277 Phase Development and Electrical
Properties of Pb(Yb1/2Nb1/2)O3-PbTiO3 Epitaxial Films. Yoshimura,
Takeshi; Trolrier-McKinstry, Susan (Materials Research Institute, The
Pennsylvania State University, University Park, PA, 16802, USA).
Integrated Ferroelectrics, 50, 33-42 (English) 2002. CODEN: IFEREU.
ISSN: 1058-4587. Publisher: Taylor & Francis Inc..

AB The growth and elec. properties of Pb(Yb1/2Nb1/2)O3-PbTiO3 (PYbN-PT)
epitaxial films were investigated. PYbN-PT epitaxial films with
SrRuO3 bottom electrodes were grown by pulsed laser deposition.
Optimization of the growth conditions for the PYbN-PT epitaxial
films was carried out on (100) SrRuO3/(100) LaAlO3 substrates using
the (50/50) compn. target. It was found that formation of
pyrochlore phase could be caused not only by low growth temps. or
lead deficiency, but also by poor surface condition of the SrRuO3
bottom electrodes. (001) PYbN-PT epitaxial films with good cryst.
quality were obtained for a range of deposition rates (60-100
nm/min) and temps. (620-680 °C) after vacuum annealing the
SrRuO3 bottom electrodes. The **ferroelec.** and piezoelec.
properties of 1 µm-thick PYbN-PT epitaxial films with (50/50) and
(60/40) compns. and with (001) and (111) orientations were
investigated using (100) LaAlO3, (100) SrTiO3, and (111) SrTiO3
substrates with SrRuO3 bottom electrodes. The highest remanent
polarization (29 µC/cm2) and effective piezoelec. coeff. e31.f
(-14 C/m2) were obsd. in the (001) PYbN-PT (50/50) film. The
transition temp. of the (001) PYbN-PT (50/50) film was about 380
°C. Because of the degrdn. of the target during the
deposition, a 3 µm-thick film was prepd. by three depositions (1
µm each layer). The 3 µm-thick film exhibited a higher e31.f
coeff. of -19 C/m2.

IT 170965-40-9, Lead niobium titanium ytterbium oxide
(PbNb0.3Ti0.4Yb0.3O3) 170965-44-3, Lead niobium titanium

ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3)

RL: PEP (Physical, engineering or chemical process); PRP

(Properties); PYP (Physical process); PROC (Process)

(phase development and elec. properties of Pb(Yb1/2Nb1/2)O3-PbTiO3 epitaxial films)

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

ST ferroelec transition elec property lead ytterbium niobate titanate

IT Annealing

Crystal growth

Crystallinity

Dielectric constant

Dielectric hysteresis

Dielectric loss

Electrodes

Epitaxial films

Ferroelectric transition

Piezoelectricity

(phase development and elec. properties of Pb(Yb1/2Nb1/2)O3-PbTiO3 epitaxial films)

IT Ferroelectricity

(remanent polarization; phase development and elec. properties of Pb(Yb1/2Nb1/2)O3-PbTiO3 epitaxial films)

IT 170965-40-9, Lead niobium titanium ytterbium oxide
(PbNb0.3Ti0.4Yb0.3O3) 170965-44-3, Lead niobium titanium
ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(phase development and elec. properties of Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ epitaxial films)

L20 ANSWER 13 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2001:820084 Document No. 136:89442 Features of phase diagrams of binary Pb(B₁/2Nb₁/2)O₃-PbTiO₃ systems in vicinity of morphotropic phase boundaries. Sternberg, A.; Shebanovs, L.; Antonova, M.; Livinsh, M. (Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia). Key Engineering Materials, 206-213(Pt. 2, Euro Ceramics VII), 1277-1280 (English) 2002. CODEN: KEMAEY. ISSN: 1013-9826. Publisher: Trans Tech Publications Ltd..

AB Due to multifunctionality binary Pb(B₁/2Nb₁/2)O₃-PbTiO₃ systems are attractive to solid state chem. and physics as promising materials for active elements in different electronic devices and microactuators. To study La doping effect on the improving of electromech. properties, ceramic samples of Pb(B₁/2Nb₁/2)O₃-PbTiO₃, were prepd., where B are rare-earth elements Lu, Er, Tm, Ho. Ceramic characteristics, phase diagrams, dielec. and electromech. parameters are reported.

IT 263872-43-1, Lead lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃) 263872-44-2, Lead lutetium niobium titanium oxide (PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) 267409-80-3, Lead lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 273750-90-6, Lead lutetium niobium titanium oxide (PbLu_{0.35}Nb_{0.35}Ti_{0.3}O₃) 273750-91-7, Lead lutetium niobium titanium oxide (PbLu_{0.32}Nb_{0.32}Ti_{0.36}O₃) 273750-93-9, Lead lutetium niobium titanium oxide (PbLu_{0.25}Nb_{0.25}Ti_{0.5}O₃) 273750-96-2, Lead lutetium niobium titanium oxide (PbLu_{0.1}Nb_{0.1}Ti_{0.8}O₃) 386742-81-0, Erbium lead niobium titanium oxide 386742-82-1, Lead niobium thulium titanium oxide 386742-83-2, Holmium lead niobium titanium oxide
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(ferroelecs.; effects of La doping in Pb(RE₁/2Nb₁/2)O₃-PbTiO₃ (RE = Lu, Er, Tm, Ho) ferroelecs . in vicinity of morphotropic phase boundaries on phase equil. and electromech. and dielec. properties)

RN 263872-43-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.4Nb0.4Ti0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

RN 267409-80-3 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 273750-90-6 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Lu	0.35	7439-94-3
Pb	1	7439-92-1

RN 273750-91-7 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Lu	0.32	7439-94-3
Pb	1	7439-92-1

RN 273750-93-9 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Lu	0.25	7439-94-3
Pb	1	7439-92-1

RN 273750-96-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Lu	0.1	7439-94-3
Pb	1	7439-92-1

RN 386742-81-0 HCAPLUS

CN Erbium lead niobium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Er	x	7440-52-0
Ti	x	7440-32-6
Nb	x	7440-03-1
Pb	x	7439-92-1

RN 386742-82-1 HCAPLUS

CN Lead niobium thulium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Ti	x	7440-32-6
Tm	x	7440-30-4
Nb	x	7440-03-1
Pb	x	7439-92-1

RN 386742-83-2 HCAPLUS

CN Holmium lead niobium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Ho	x	7440-60-0
Ti	x	7440-32-6
Nb	x	7440-03-1
Pb	x	7439-92-1

CC 57-2 (Ceramics)

Section cross-reference(s): 68

ST rare earth lead niobate titanate **ferroelec** lanthanum
doping property; phase diagram rare earth lead niobate titanate;
lutetium lead niobate titanate phase diagram property; erbium lead
niobate titanate phase diagram property; thulium lead niobate
titanate phase diagram property; holmium lead niobate titanate phase
diagram property; lanthanum doping rare earth lead niobate titanate
property

IT **Ferroelectric** materials

(lead rare earth niobate titanate; effects of La doping in
Pb(RE₁/2Nb₁/2)O₃-PbTiO₃ (RE = Lu, Er, Tm, Ho) **ferroelecs**
. in vicinity of morphotropic phase boundaries on phase equil.
and electromech. and dielec. properties)

IT 263872-43-1, Lead lutetium niobium titanium oxide
(PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃) 263872-44-2, Lead lutetium niobium
titanium oxide (PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) 267409-80-3, Lead
lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃)
273750-90-6, Lead lutetium niobium titanium oxide
(PbLu_{0.35}Nb_{0.35}Ti_{0.3}O₃) 273750-91-7, Lead lutetium niobium
titanium oxide (PbLu_{0.32}Nb_{0.32}Ti_{0.36}O₃) 273750-93-9, Lead
lutetium niobium titanium oxide (PbLu_{0.25}Nb_{0.25}Ti_{0.5}O₃)
273750-96-2, Lead lutetium niobium titanium oxide
(PbLu_{0.1}Nb_{0.1}Ti_{0.8}O₃) 386742-81-0, Erbium lead niobium
titanium oxide 386742-82-1, Lead niobium thulium titanium
oxide 386742-83-2, Holmium lead niobium titanium oxide
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); TEM (Technical or engineered
material use); PROC (Process); USES (Uses)

(**ferroelecs.**; effects of La doping in
Pb(RE₁/2Nb₁/2)O₃-PbTiO₃ (RE = Lu, Er, Tm, Ho) **ferroelecs**
. in vicinity of morphotropic phase boundaries on phase equil.
and electromech. and dielec. properties)

IT 12032-01-8, Lead lutetium niobium oxide (Pb₂LuNbO₆) 12060-00-3,
Lead titanium oxide (PbTiO₃) 12162-47-9, Holmium lead niobium
oxide (HoPb₂NbO₆) 12434-07-0, Erbium lead niobium oxide
(ErPb₂NbO₆) 12439-25-7, Lead niobium thulium oxide (Pb₂NbTmO₆)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); TEM (Technical or engineered
material use); PROC (Process); USES (Uses)
(lead rare earth niobate titanate **ferroelecs.**; effects

of La doping in $\text{Pb}(\text{RE}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ (RE = Lu, Er, Tm, Ho)
ferroelecs. in vicinity of morphotropic phase boundaries
on phase equil. and electromech. and dielec. properties)

L20 ANSWER 14 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2001:754370 Document No. 136:46579 Crystal growth and dielectric properties of solid solutions of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ with (PbTiO_3) with a high Curie temperature near a morphotropic phase boundary. Yasuda, Naohiko; Ohwa, Hidehiro; Kume, Motoyuki; Hosono, Yasuharu; Yamashita, Yohachi; Ishino, Shinnichirou; Terauchi, Hikaru; Iwata, Makoto; Ishibashi, Yoshihiro (Department of Electrical and Electronic Engineering, Gifu University, Gifu, 501-1193, Japan). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 40(9B), 5664-5667 (English) 2001. CODEN: JAPNDE. Publisher: Japan Society of Applied Physics.

AB The $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ (PYN-PT) binary system single crystal near the morphotropic phase boundary (MPB) compn. with (100) planes of 1-2 mm length on one side was successfully grown by the flux method using $\text{PhO-PbF}_2\text{-B}_2\text{O}_3$ flux. The PYN-PT (47/53) single crystal was found, by simultaneous microdifferential thermal anal. and thermogravimetric anal., to show a peritectic m.p. at 1205°C with a decompn. of the perovskite crystals into a pyrochlore phase and a liquidus point at 1253°C. The structure of the PYN-PT (47/53) single crystal was detd. by x-ray diffraction study to be tetragonal with $a = 4.05 \pm 0.01$ Å and $c = 4.14 \pm 0.01$ Å at room temp. The PYN-PT single crystal shows the max. value of the relative permittivity ϵ_r of 16000 at 1 kHz at a Curie temp. T_c of 404°C, which is as high as that in the $\text{Pb}(\text{Zr,Ti})\text{O}_3$ system near the MPB and the value of the remanent polarization P_r of about 26 $\mu\text{C}/\text{cm}^2$ at 140°C.

IT 380405-46-9, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PYP (Physical process); PROC (Process)
(crystal growth and dielec. properties of solid solns. of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ with a high Curie temp. near a morphotropic phase boundary)

RN 380405-46-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.24}\text{Ti}_{0.53}\text{Yb}_{0.24}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.53	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

CC 76-9 (Electric Phenomena)

IT Crystal growth

Crystal structure

Curie temperature (ferroelectric)

Dielectric constant

Ferroelectricity

Melting point

Structural phase transition

Thermal analysis

Thermogravimetric analysis

(crystal growth and dielec. properties of solid solns. of
Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ with a high Curie temp. near a
morphotropic phase boundary)

IT 380405-46-9, Lead niobium titanium ytterbium oxide

(PbNb_{0.24}Ti_{0.53}Yb_{0.24}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PYP (Physical process); PROC (Process)

(crystal growth and dielec. properties of solid solns. of
Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ with a high Curie temp. near a
morphotropic phase boundary)

L20 ANSWER 15 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2001:485053 Document No. 135:203740 Transverse piezoelectric
properties of epitaxial Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ (50/50) films.
Yoshimura, T.; Trolier-McKinstry, S. (Materials Research Laboratory,
The Pennsylvania State University, University Park, PA, 16802-4801,
USA). Journal of Crystal Growth, 229, 445-449 (English) 2001.
CODEN: JCRGAE. ISSN: 0022-0248. Publisher: Elsevier Science B.V..

AB The transverse piezoelec. properties of (1-x)Pb(Yb₁/2Nb₁/2)O₃-
xPbTiO₃ (PYbN-PT, x=0.5) epitaxial films grown on (0 0 1)SrRuO₃/(0 0
1)LaAlO₃ (indexes given for the pseudocubic unit cell) were
investigated by the wafer flexure technique. PYbN-PT films and
SrRuO₃ bottom electrodes were deposited by pulsed laser deposition.
At a deposition pressure of 400 mTorr, (0 0 1) PYbN-PT epitaxial
films with high phase purity and good cryst. quality were obtained
for a wide range of deposition rates (40-100 nm/min) and temps.
(620-660°C). The remanent polarization of the film was as
high as 30 µC/cm². The e₃₁ coeff. and the aging rate were
strongly dependent on the poling direction. The max. e₃₁ coeff. was
-11.0 C/m². The min. aging rate of the piezoelec. coeffs. for the
films was 2% per decade.

IT 170965-44-3, Lead niobium titanium ytterbium oxide

(PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PRP (Properties)

(transverse piezoelec. properties of epitaxial
Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ (50/50) films)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

IT **Ferroelectricity**

Laser radiation

(deposition)

IT 170965-44-3, Lead niobium titanium ytterbium oxide
(PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PRP (Properties)

(transverse piezoelec. properties of epitaxial
Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ (50/50) films)

L20 ANSWER 16 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

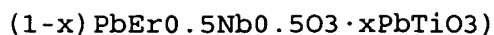
2000:805494 Document No. 134:79501 Study of ferroelectric
ceramics of Pb(B_{1/23}Nb_{1/2})O₃-PbTiO₃ solid solutions. Sternberg,
A.; Shebanovs, L.; Yamashita, J.; Antonova, M.; Livins, M. (Inst.
Fiz. Tverdogo Tela, Latv. Univ., Riga, Latvia). Izvestiya Akademii
Nauk, Seriya Fizicheskaya, 64(6), 1211-1215 (Russian) 2000. CODEN:
IRAFEO. ISSN: 1026-3489. Publisher: Nauka.

AB Solid solns. of the formulas (1-x)PbLu_{0.5}Nb_{0.5}O₃·xPbTiO₃ and
(1-x)PbEr_{0.5}Nb_{0.5}O₃·xPbTiO₃ were prepd. by solid-state
reactions. Their room-temp. phase diagrams, dielec. properties, and
piezoelectricity were detd. as functions of x.

IT 233685-93-3P, Erbium lead niobium titanium oxide
(Er_{0.45}PbNb_{0.45}Ti_{0.1}O₃) 233685-94-4P, Erbium lead niobium
titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.2}O₃) 233685-95-5P, Erbium
lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.3}O₃)
233685-97-7P, Erbium lead niobium titanium oxide
(Er_{0.3}PbNb_{0.3}Ti_{0.4}O₃) 233685-99-9P, Erbium lead niobium
titanium oxide (Er_{0.25}PbNb_{0.25}Ti_{0.5}O₃) 233686-00-5P,
Erbium lead niobium titanium oxide (Er_{0.2}PbNb_{0.2}Ti_{0.6}O₃)
233686-01-6P, Erbium lead niobium titanium oxide
(Er_{0.15}PbNb_{0.15}Ti_{0.7}O₃) 233686-02-7P, Erbium lead niobium
titanium oxide (Er_{0.1}PbNb_{0.1}Ti_{0.8}O₃) 263872-43-1P, Lead
lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.1}O₃)
263872-44-2P, Lead lutetium niobium titanium oxide
(PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) 267409-80-3P, Lead lutetium niobium
titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 273750-90-6P, Lead
lutetium niobium titanium oxide (PbLu_{0.35}Nb_{0.35}Ti_{0.3}O₃)
273750-91-7P, Lead lutetium niobium titanium oxide
(PbLu_{0.32}Nb_{0.32}Ti_{0.36}O₃) 273750-93-9P, Lead lutetium
niobium titanium oxide (PbLu_{0.25}Nb_{0.25}Ti_{0.5}O₃) 273750-96-2P
, Lead lutetium niobium titanium oxide (PbLu_{0.1}Nb_{0.1}Ti_{0.8}O₃)
315204-16-1P, Lead lutetium niobium titanium oxide
(PbLu_{0.3}Nb_{0.3}Ti_{0.39}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); SPN (Synthetic preparation); PREP (Preparation); PROC
(Process)

(prepn. and properties of (1-x)PbLu_{0.5}Nb_{0.5}O₃·xPbTiO₃ and



RN 233685-93-3 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.45}PbNb_{0.45}Ti_{0.10}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.45	7440-52-0
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 233685-94-4 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.20}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.4	7440-52-0
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 233685-95-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.30}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.35	7440-52-0
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 233685-97-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.40}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.3	7440-52-0
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 233685-99-9 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.25}PbNb_{0.25}Ti_{0.5}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.25	7440-52-0
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 233686-00-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.2}PbNb_{0.2}Ti_{0.6}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.2	7440-52-0
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 233686-01-6 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.15}PbNb_{0.15}Ti_{0.7}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.15	7440-52-0
Ti	0.7	7440-32-6
Nb	0.15	7440-03-1
Pb	1	7439-92-1

RN 233686-02-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.1}PbNb_{0.1}Ti_{0.8}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.1	7440-52-0
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

RN 263872-43-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.45Nb0.45Ti0.1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.4Nb0.4Ti0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

RN 267409-80-3 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 273750-90-6 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Lu	0.35	7439-94-3
Pb	1	7439-92-1

RN 273750-91-7 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Lu	0.32	7439-94-3
Pb	1	7439-92-1

RN 273750-93-9 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Lu	0.25	7439-94-3
Pb	1	7439-92-1

RN 273750-96-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Lu	0.1	7439-94-3
Pb	1	7439-92-1

RN 315204-16-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.39O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.39	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

- CC 76-8 (Electric Phenomena)
Section cross-reference(s): 57
- ST lead lutetium erbium niobate titanate dielec piezoelec;
ferroelectricity lead lutetium erbium niobate titanate
- IT **Ferroelectric** materials
(ceramic; prepn. and properties of (1-x)PbLu0.5Nb0.5O3·xPbTiO3 and (1-x)PbEr0.5Nb0.5O3·xPbTiO3)
- IT 12032-01-8P, Lead lutetium niobium oxide (Pb2LuNbO6) 12060-00-3P, Lead titanium oxide (PbTiO3) 12434-07-0P, Erbium lead niobium oxide (ErPb2NbO6) 233685-93-3P, Erbium lead niobium titanium oxide (Er0.45PbNb0.45Ti0.1O3) 233685-94-4P, Erbium lead niobium titanium oxide (Er0.4PbNb0.4Ti0.2O3) 233685-95-5P, Erbium lead niobium titanium oxide (Er0.35PbNb0.35Ti0.3O3) 233685-97-7P, Erbium lead niobium titanium oxide (Er0.3PbNb0.3Ti0.4O3) 233685-99-9P, Erbium lead niobium titanium oxide (Er0.25PbNb0.25Ti0.5O3) 233686-00-5P, Erbium lead niobium titanium oxide (Er0.2PbNb0.2Ti0.6O3) 233686-01-6P, Erbium lead niobium titanium oxide (Er0.15PbNb0.15Ti0.7O3) 233686-02-7P, Erbium lead niobium titanium oxide (Er0.1PbNb0.1Ti0.8O3) 263872-43-1P, Lead lutetium niobium titanium oxide (PbLu0.45Nb0.45Ti0.1O3) 263872-44-2P, Lead lutetium niobium titanium oxide (PbLu0.4Nb0.4Ti0.2O3) 267409-80-3P, Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) 273750-90-6P, Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) 273750-91-7P, Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) 273750-93-9P, Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) 273750-96-2P, Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) 315204-16-1P, Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.39O3)
- RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(prepn. and properties of (1-x)PbLu0.5Nb0.5O3·xPbTiO3 and (1-x)PbEr0.5Nb0.5O3·xPbTiO3)
- L20 ANSWER 17 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:367884 Document No. 133:93212 Morphotropic ceramic solid solutions of the Pb(B3+1/2Nb1/2)O3-PbTiO3 binary system. Sternberg, Andris; Shebanovs, Leonids; Yamashita, John Y.; Antonova, Maija; Livinsh, Maris (Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia). Ferroelectrics, 241(1-4), 1695-1702 (English) 2000. CODEN: FEROA8. ISSN: 0015-0193. Publisher: Gordon & Breach Science Publishers.
- AB The structure, dielec., **ferroelec.** and electromech. properties of lead lutetium niobate-titanate (PLuNT) and lead erbium niobate-titanate (PERNT) binary systems are reported. The data of phase diagram, crystallog. symmetry and morphotropic phase boundaries (MPB) are provided. High values of the electromech.

coupling coeffs. $k_p = 0.66$, $k_t = 0.48$, $k_{31} = 0.36$ of $(1-x)\text{PLuN}-x\text{PT}$ ceramics are attained in compns. near the MPB at $x \approx 0.41$.

IT 233685-98-8, Erbium lead niobium titanium oxide
 $(\text{Er}_{0.3}\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{O}_3)$ 263872-43-1, Lead lutetium niobium
 titanium oxide $(\text{PbLu}_{0.45}\text{Nb}_{0.45}\text{Ti}_{0.1}\text{O}_3)$ 263872-44-2, Lead
 lutetium niobium titanium oxide $(\text{PbLu}_{0.4}\text{Nb}_{0.4}\text{Ti}_{0.2}\text{O}_3)$
 267409-80-3, Lead lutetium niobium titanium oxide
 $(\text{PbLu}_{0.3}\text{Nb}_{0.3}\text{Ti}_{0.4}\text{O}_3)$ 273750-90-6, Lead lutetium niobium
 titanium oxide $(\text{PbLu}_{0.35}\text{Nb}_{0.35}\text{Ti}_{0.3}\text{O}_3)$ 273750-93-9, Lead
 lutetium niobium titanium oxide $(\text{PbLu}_{0.25}\text{Nb}_{0.25}\text{Ti}_{0.5}\text{O}_3)$
 273750-96-2, Lead lutetium niobium titanium oxide
 $(\text{PbLu}_{0.1}\text{Nb}_{0.1}\text{Ti}_{0.8}\text{O}_3)$
 RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); TEM (Technical or engineered material use); PROC
 (Process); USES (Uses)
 (ferroelecs.; structure, dielec., ferroelec.
 and electromech. properties of morphotropic ceramic solid solns.
 of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system ($\text{B} = \text{Lu}$ and Er)

RN 233685-98-8 HCAPLUS
 CN Erbium lead niobium titanium oxide $(\text{Er}_{0.3}\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{O}_3)$ (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Er	0.3	7440-52-0
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 263872-43-1 HCAPLUS
 CN Lead lutetium niobium titanium oxide $(\text{PbLu}_{0.45}\text{Nb}_{0.45}\text{Ti}_{0.1}\text{O}_3)$ (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS
 CN Lead lutetium niobium titanium oxide $(\text{PbLu}_{0.4}\text{Nb}_{0.4}\text{Ti}_{0.2}\text{O}_3)$ (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2

Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

RN 267409-80-3 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.41O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 273750-90-6 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Lu	0.35	7439-94-3
Pb	1	7439-92-1

RN 273750-93-9 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Lu	0.25	7439-94-3
Pb	1	7439-92-1

RN 273750-96-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Lu	0.1	7439-94-3
Pb	1	7439-92-1

CC 57-2 (Ceramics)

Section cross-reference(s): 75, 76

ST lead rare earth niobate titanate structure **ferroelec** property; lutetium rare earth niobate titanate structure **ferroelec** property; erbium rare earth niobate titanate structure **ferroelec** property

IT **Ferroelectricity**

(coercive field; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT **Piezoelectricity**

(electromech. coupling factor; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT **Ferroelectric materials**

(lead erbium niobate titanate; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT **Ferroelectric materials**

(lead lutetium niobate titanate; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT **Dielectric constant**

(structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT 233685-98-8, Erbium lead niobium titanium oxide ($\text{Er}_{0.3}\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{O}_3$) 263872-43-1, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.45}\text{Nb}_{0.45}\text{Ti}_{0.1}\text{O}_3$) 263872-44-2, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.4}\text{Nb}_{0.4}\text{Ti}_{0.2}\text{O}_3$) 267409-80-3, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.3}\text{Nb}_{0.3}\text{Ti}_{0.4}\text{O}_3$) 273750-90-6, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.35}\text{Nb}_{0.35}\text{Ti}_{0.3}\text{O}_3$) 273750-93-9, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.25}\text{Nb}_{0.25}\text{Ti}_{0.5}\text{O}_3$) 273750-96-2, Lead lutetium niobium titanium oxide ($\text{PbLu}_{0.1}\text{Nb}_{0.1}\text{Ti}_{0.8}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(**ferroelecs.**; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the $\text{Pb}(\text{B}_{3+1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system (B = Lu and Er))

IT 12032-01-8, Lead lutetium niobate $\text{PbLu}_{0.5}\text{Nb}_{0.5}\text{O}_3$ 12060-00-3, Lead titanium oxide (PbTiO_3) 12434-07-0, Erbium lead niobium oxide

(ErPb₂NbO₆)

RL: PEP (Physical, engineering or chemical process); PRP (Properties); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(rare earth niobate titanate **ferroelecs.**; structure, dielec., **ferroelec.** and electromech. properties of morphotropic ceramic solid solns. of the Pb(B_{3+1/2}Nb_{1/2})O₃-PbTiO₃ binary system (B = Lu and Er))

L20 ANSWER 18 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2000:276610 Document No. 132:341489 Effects of structure ordering, structure defects and external conditions on properties of complex **ferroelectric** perovskites. Sternberg, A.; Shebanovs, L.; Birks, E.; Yamashita, Y.; Tyunina, M.; Zauls, V. (Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia). Ferroelectrics, 217(1-4), 307-317 (English) 1998. CODEN: FEROA8. ISSN: 0015-0193. Publisher: Gordon & Breach Science Publishers.

AB A review with 11 refs. Structural rearrangements in lead-contg. (A' A") (B' B")O₃ type perovskite compds. are caused by technol. treatment, high-energy radiation and ambient conditions. Variation of structure ordering along with modification (substituted or defected solid solns.) may provide promising compns. for applications, e.g., cascade microcryogenic devices (PST solid solns.); efficient piezoelec. materials - here the new (1-x)Pb(Lu_{1/2}Nb_{1/2})O₃-xPbTiO₃ system in the morphotropic region. The max. values of the electromech. coupling coeffs. $k_p = 0.663$, $k_t = 0.481$, $k_{31} = 0.355$ were attained in compns. PLuNT 59/41 ($T_m = 353^\circ\text{C}$) near the morphotropic phase boundary. In P(L)ZT and PLT thin films asymmetry of piezoelec. coeff. d_{33} hysteresis diminished values of d_{33} and their frequency dependence were attributed to residual stress at the film-substrate/electrode interfaces and unrelaxed strain characteristic in highly oriented thin films. Neutron irradiation by fluence 10^{18}n/cm^2 causes some changes in thin film properties, however, they are less pronounced compared to bulk material of the same compn.

IT 267409-80-3, Lead lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 267409-82-5, Lead lutetium niobium titanium oxide

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(effects of structure ordering, structure defects and external conditions on properties of complex **ferroelec.** perovskites)

RN 267409-80-3 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.41	7440-32-6

Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 267409-82-5 HCAPLUS

CN Lead lutetium niobium titanium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Ti	x	7440-32-6
Nb	x	7440-03-1
Lu	x	7439-94-3
Pb	x	7439-92-1

CC 76-0 (Electric Phenomena)

Section cross-reference(s): 75

ST ferroelec perovskite structure piezoelectricity review

IT Crystal defects

Ferroelectric materials

Hysteresis

Order-disorder transition

Perovskite-type crystals

Piezoelectricity

Radiation induced crystal defects

Strain

(effects of structure ordering, structure defects and external conditions on properties of complex ferroelec. perovskites)

IT 12626-80-1, Lanthanum lead titanium oxide 12676-60-7, Lanthanum lead titanium zirconium oxide 267409-80-3, Lead lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 267409-82-5, Lead lutetium niobium titanium oxide

RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)

(effects of structure ordering, structure defects and external conditions on properties of complex ferroelec. perovskites)

IT 12586-31-1, Neutron

RL: PEP (Physical, engineering or chemical process); PROC (Process) (irradn.; effects of structure ordering, structure defects and external conditions on properties of complex ferroelec. perovskites)

L20 ANSWER 19 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

2000:178222 Document No. 132:287146 Structure and properties of high piezoelectric coupling Pb(B¹/2Nb¹/2)O₃-PbTiO₃ binary systems. Sternberg, Andris; Shebanovs, Leonids; Yamashita, John Y.; Antonova, Maija; Livinsh, Maris; Shorubalko, Ivan (Institute of Solid State Physics University of Latvia, Riga, LV-1063, Latvia). Ferroelectrics, 224(1-4), 565-572 (English) 1999. CODEN: FEROA8.

ISSN: 0015-0193. Publisher: Gordon & Breach Science Publishers.

- AB The (1-x)Pb(Lu_{1/2}Nb_{1/2})O₃-xPbTiO₃ and (1-x)Pb(Er_{1/2}Nb_{1/2})O₃-xPbTiO₃ binary systems have been obtained, the structure and properties of which are studied. The unit cell of erbium niobate (PERN) is described as pseudomonoclinic of orthorhombic Bmm2 symmetry: a=c=4.2161 Å; b=4.0869 Å; β=90.55° and compn. is characterized with antiferroelec. phase transition at 305°C. The PERNT system has the morphotropic phase region extending over the x=0.4-0.6 interval. In PLuNT ceramics system the pseudomonoclinic phase structure Bmm2 extending over the 0≤x≤0.38 interval becomes pseudocubic at x≈0.2. The morphotropic region is spread over 0.38<x<0.49; at higher PT concns. (1.0≥x≥0.49) the structure transfers to the tetragonal P4mm phase. The max. values of the electromech. coupling coeffs. kp=0.66, kl=0.48, k31=0.35 were attained in compns. PLuNT 59/41 near the morphotropic phase boundary.
- IT 233686-03-8P, Erbium lead niobium titanium oxide (Er_{0.5}PbNb_{0.5}TiO₃) 263871-47-2P, Lead lutetium niobium titanium oxide (PbLu_{0.5}Nb_{0.5}TiO₃) 263872-43-1P, Lead lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}TiO₃) 263872-44-2P, Lead lutetium niobium titanium oxide (PbLu_{0.4}Nb_{0.4}TiO₃)
 RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
 (structure and properties of high piezoelec. coupling Pb(B'_{1/2}Nb_{1/2})O₃-PbTiO₃ binary systems)
- RN 233686-03-8 HCAPLUS
- CN Erbium lead niobium titanium oxide (Er_{0.5}PbNb_{0.5}TiO₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0 - 0.5	7440-52-0
Ti	0 - 1	7440-32-6
Nb	0 - 0.5	7440-03-1
Pb	1	7439-92-1

- RN 263871-47-2 HCAPLUS
- CN Lead lutetium niobium titanium oxide (PbLu_{0.5}Nb_{0.5}TiO₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0 - 1	7440-32-6
Nb	0 - 0.5	7440-03-1
Lu	0 - 0.5	7439-94-3
Pb	1	7439-92-1

RN 263872-43-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.45Nb0.45Ti0.103) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.4Nb0.4Ti0.203) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

Section cross-reference(s): 57, 75

ST lead lutetium erbium niobium titanium oxide **ferroelec**
ceramics piezoelectricityIT **Ferroelectric** materials(ceramic; structure and properties of high piezoelec. coupling
Pb(B¹/2Nb¹/2)O₃-PbTiO₃ binary systems)

IT Calcination

Crystal structure-property relationship

Density

Dielectric constant

Dielectric polarization

Ferroelectric transition

Grain size

Phase diagram

Piezoelectricity

(structure and properties of high piezoelec. coupling

Pb(B¹/2Nb¹/2)O₃-PbTiO₃ binary systems)IT 12032-01-8P, Lead lutetium niobium oxide (Pb₂LuNbO₆) 12434-07-0P,Erbium lead niobium oxide (ErPb₂NbO₆) 233686-03-8P, Erbiumlead niobium titanium oxide (Er_{0.5}PbNb_{0.5}Ti_{0.103})

263871-47-2P, Lead lutetium niobium titanium oxide

(PbLu_{0.5}Nb_{0.5}Ti_{0.103}) 263872-43-1P, Lead lutetiumniobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.103}) 263872-44-2P, Lead lutetium niobium titanium oxide (PbLu_{0.4}Nb_{0.4}Ti_{0.203})

RL: PRP (Properties); SPN (Synthetic preparation); TEM (Technical or

engineered material use); PREP (Preparation); USES (Uses)
 (structure and properties of high piezoelec. coupling
 Pb(B¹/2Nb¹/2)O₃-PbTiO₃ binary systems)

L20 ANSWER 20 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1999:694542 Document No. 131:358986 Dielectric properties and x-ray study of Zr-substituted Pb(Yb¹/2Nb¹/2)O₃ ceramics. Kim, Jai-Hyun; Im, Ki Vin; Choo, Woong Kil (Department of Materials Science and Engineering, Korea Advanced Institute of Science and Technology, Taejon, S. Korea). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 38(9B), 5474-5477 (English) 1999. CODEN: JAPNDE. ISSN: 0021-4922. Publisher: Japanese Journal of Applied Physics.

AB The dielec. behavior and the crystal structure of (1-x)Pb(Yb¹/2Nb¹/2)O₃-xPbZrO₃ (PYN¹-xPZx) (0 ≤ x ≤ 0.6) solid soln. have been studied. In the PYN-rich compn. range (0 ≤ x ≤ 0.3), the paraelec. (PE)-antiferroelec. (AFE) phase transition takes place sharply and is independent of the applied frequency. However, on increasing PZ concn., the dielec. const. vs. temp. curve becomes gradually broader and the apparent transition temp. becomes frequency-dependent. For 0.33 ≤ x ≤ 0.60, the crystal structure becomes pseudo-cubic from the PYN's orthorhombic and a typical relaxor phase transition is clearly established.

IT 184363-31-3P, Lead niobium ytterbium zirconium oxide (PbNb_{0.45}Yb_{0.45}Zr_{0.10}O₃) 184363-42-6P, Lead niobium ytterbium zirconium oxide (PbNb_{0.25}Yb_{0.25}Zr_{0.60}O₃) 184363-44-8P, Lead niobium ytterbium zirconium oxide (PbNb_{0.35}Yb_{0.35}Zr_{0.40}O₃) 184363-46-0P, Lead niobium ytterbium zirconium oxide (PbNb_{0.35}Yb_{0.35}Zr_{0.30}O₃) 184363-48-2P, Lead niobium ytterbium zirconium oxide (PbNb_{0.45}Yb_{0.45}Zr_{0.20}O₃) 247042-84-8P, Lead niobium ytterbium zirconium oxide (PbNb_{0.25}Yb_{0.25}Zr_{0.50}O₃) 250679-55-1P, Lead niobium ytterbium zirconium oxide (PbNb_{0.34}Yb_{0.34}Zr_{0.33}O₃) 250679-56-2P, Lead niobium ytterbium zirconium oxide (PbNb_{0.32}Yb_{0.32}Zr_{0.35}O₃) 250679-57-3P, Lead niobium ytterbium zirconium oxide (PbNb_{0.32}Yb_{0.32}Zr_{0.37}O₃)

RL: PNU (Preparation, unclassified); PRP (Properties); PREP (Preparation)

(dielec. properties and x-ray study of Zr-substituted Pb(Yb¹/2Nb¹/2)O₃ ceramics)

RN 184363-31-3 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb_{0.45}Yb_{0.45}Zr_{0.10}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.1	7440-67-7
Yb	0.45	7440-64-4
Nb	0.45	7440-03-1

Pb	1	7439-92-1
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RN 184363-42-6 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.2Yb0.2Zr0.6O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.6	7440-67-7
Yb	0.2	7440-64-4
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 184363-44-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.3Yb0.3Zr0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.4	7440-67-7
Yb	0.3	7440-64-4
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 184363-46-0 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.35Yb0.35Zr0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.3	7440-67-7
Yb	0.35	7440-64-4
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 184363-48-2 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.4Yb0.4Zr0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.2	7440-67-7
Yb	0.4	7440-64-4
Nb	0.4	7440-03-1

Pb | 1 | 7439-92-1

RN 247042-84-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.25Yb0.25Zr0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.5	7440-67-7
Yb	0.25	7440-64-4
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 250679-55-1 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.34Yb0.34Zr0.33O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.33	7440-67-7
Yb	0.34	7440-64-4
Nb	0.34	7440-03-1
Pb	1	7439-92-1

RN 250679-56-2 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.32Yb0.32Zr0.35O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.35	7440-67-7
Yb	0.32	7440-64-4
Nb	0.32	7440-03-1
Pb	1	7439-92-1

RN 250679-57-3 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.32Yb0.32Zr0.37O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.37	7440-67-7
Yb	0.32	7440-64-4
Nb	0.32	7440-03-1

Pb | 1 | 7439-92-1

CC 76-9 (Electric Phenomena)
Section cross-reference(s): 57

IT **Ferroelectric materials**
(ceramic; dielec. properties and x-ray study of Zr-substituted
Pb(Yb₁/2Nb₁/2)O₃ ceramics)

IT Antiferroelectricity
Crystal structure
Curie temperature (ferroelectric)
Dielectric constant
Dielectric hysteresis
Ferroelectric transition
Phase diagram
Solid solutions
(dielec. properties and x-ray study of Zr-substituted
Pb(Yb₁/2Nb₁/2)O₃ ceramics)

IT **184363-31-3P**, Lead niobium ytterbium zirconium oxide
(PbNb_{0.45}Yb_{0.45}Zr_{0.10}O₃) **184363-42-6P**, Lead niobium
ytterbium zirconium oxide (PbNb_{0.2}Yb_{0.2}Zr_{0.6}O₃) **184363-44-8P**
, Lead niobium ytterbium zirconium oxide (PbNb_{0.3}Yb_{0.3}Zr_{0.4}O₃)
184363-46-0P, Lead niobium ytterbium zirconium oxide
(PbNb_{0.35}Yb_{0.35}Zr_{0.30}O₃) **184363-48-2P**, Lead niobium
ytterbium zirconium oxide (PbNb_{0.4}Yb_{0.4}Zr_{0.2}O₃) **247042-84-8P**
, Lead niobium ytterbium zirconium oxide (PbNb_{0.25}Yb_{0.25}Zr_{0.50}O₃)
250679-55-1P, Lead niobium ytterbium zirconium oxide
(PbNb_{0.34}Yb_{0.34}Zr_{0.33}O₃) **250679-56-2P**, Lead niobium
ytterbium zirconium oxide (PbNb_{0.32}Yb_{0.32}Zr_{0.35}O₃)
250679-57-3P, Lead niobium ytterbium zirconium oxide
(PbNb_{0.32}Yb_{0.32}Zr_{0.37}O₃)
RL: PNU (Preparation, unclassified); PRP (Properties); PREP
(Preparation)
(dielec. properties and x-ray study of Zr-substituted
Pb(Yb₁/2Nb₁/2)O₃ ceramics)

L20 ANSWER 21 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1999:563548 Document No. 131:305853 A study of the dielectric
properties and diffuse phase transition of the (1-x)Pb(Yb₁/2Nb₁/2)O₃-
xPbZrO₃ binary system. Im, Ki Vin; Kim, Jai-Hyun; Choo, Woong Kil
(Department of Materials Science and Engineering, Korea Advanced
Institute of Science and Technology, Taejon, S. Korea). Proceedings
of the IEEE International Symposium on Applications of
Ferroelectrics, 11th, Montreux, Switz., Aug. 24-27, 1998, 467-470.
Editor(s): Colla, Enrico; Damjanovic, Dragan; Setter, Nava.
Institute of Electrical and Electronics Engineers: New York, N. Y.
(English) 1998. CODEN: 68BPAC.

AB The dielec. properties and the behavior of phase transition in the
(1-x) Pb(Yb₁/2Nb₁/2)O₃-x PbZrO₃ (0 ≤ x ≤ 0.6) ceramic
system have been investigated. For 0 ≤ x ≤ 0.3, the
phase transition is relatively sharp and the dielec. const. approx.
follows the Curie-Weiss law above the transition temp. Beyond
x=0.4, the temp. dependence of dielec. const. becomes broadened and

the transition temp. shifts toward the high temp. with an increase in the measuring frequency.

IT 184363-31-3P, Lead niobium ytterbium zirconium oxide
(PbNb0.45Yb0.45Zr0.1O3) 184363-44-8P, Lead niobium
ytterbium zirconium oxide (PbNb0.3Yb0.3Zr0.4O3) 184363-46-0P
, Lead niobium ytterbium zirconium oxide (PbNb0.35Yb0.35Zr0.3O3)
247042-82-6P, Lead niobium ytterbium zirconium oxide
(PbNb0.22Yb0.22Zr0.55O3) 247042-83-7P, Lead niobium
ytterbium zirconium oxide (PbNb0.28Yb0.28Zr0.45O3)
247042-84-8P, Lead niobium ytterbium zirconium oxide
(PbNb0.25Yb0.25Zr0.5O3)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); SPN (Synthetic preparation); PREP (Preparation); PROC
(Process)
(dielec. properties and diffuse phase transition of the
(1-x)Pb(Yb_{1/2}Nb_{1/2})O₃-xPbZrO₃ binary system)
RN 184363-31-3 HCAPLUS
CN Lead niobium ytterbium zirconium oxide (PbNb0.45Yb0.45Zr0.1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.1	7440-67-7
Yb	0.45	7440-64-4
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 184363-44-8 HCAPLUS
CN Lead niobium ytterbium zirconium oxide (PbNb0.3Yb0.3Zr0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.4	7440-67-7
Yb	0.3	7440-64-4
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 184363-46-0 HCAPLUS
CN Lead niobium ytterbium zirconium oxide (PbNb0.35Yb0.35Zr0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.3	7440-67-7
Yb	0.35	7440-64-4

Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 247042-82-6 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.22Yb0.22Zr0.55O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.55	7440-67-7
Yb	0.22	7440-64-4
Nb	0.22	7440-03-1
Pb	1	7439-92-1

RN 247042-83-7 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.28Yb0.28Zr0.45O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.45	7440-67-7
Yb	0.28	7440-64-4
Nb	0.28	7440-03-1
Pb	1	7439-92-1

RN 247042-84-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.25Yb0.25Zr0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Zr	0.5	7440-67-7
Yb	0.25	7440-64-4
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57, 75

ST lead ytterbate niobate zirconate ferroelec ceramic phase
transition

IT Ferroelectric materials

(ceramic; dielec. properties and diffuse phase transition of the
(1-x)Pb(Yb_{1/2}Nb_{1/2})O₃-xPbZrO₃ binary system)

IT Calcination

Curie-Weiss law

Dielectric constant

Ferroelectric transition**Sintering**

(dielec. properties and diffuse phase transition of the

(1-x)Pb(Yb₁/2Nb₁/2)O₃-xPbZrO₃ binary system)

- IT 184363-31-3P, Lead niobium ytterbium zirconium oxide (PbNb_{0.45}Yb_{0.45}Zr_{0.10}O₃) 184363-44-8P, Lead niobium ytterbium zirconium oxide (PbNb_{0.35}Yb_{0.35}Zr_{0.40}O₃) 184363-46-0P, Lead niobium ytterbium zirconium oxide (PbNb_{0.35}Yb_{0.35}Zr_{0.30}O₃) 247042-82-6P, Lead niobium ytterbium zirconium oxide (PbNb_{0.22}Yb_{0.22}Zr_{0.55}O₃) 247042-83-7P, Lead niobium ytterbium zirconium oxide (PbNb_{0.28}Yb_{0.28}Zr_{0.45}O₃) 247042-84-8P, Lead niobium ytterbium zirconium oxide (PbNb_{0.25}Yb_{0.25}Zr_{0.50}O₃)
- RL: PEP (Physical, engineering or chemical process); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
- (dielec. properties and diffuse phase transition of the (1-x)Pb(Yb₁/2Nb₁/2)O₃-xPbZrO₃ binary system)

L20 ANSWER 22 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1999:377221 Document No. 131:135207 Structure and physical properties of a number of new binary systems (1-x)Pb(B₃+1/2Nb₁/2)O₃-x-PbTiO₃. Shternberg, A.; Shebanovs, L.; Yamashita, J.; Antonova, M.; Livin'sh, M.; Shorubalko, I. (Inst. Fiz. Tverd. Tela, Latv. Gos. Univ., Latvia). Kristallografiya, 44(1), 40-48 (Russian) 1999. CODEN: KRISAJ. ISSN: 0023-4761. Publisher: MAIK Nauka/Interperiodica Publishing.

AB By thermochem. reaction in the solid phase (1-x)Pb(Lu₁/2Nb₁/2)O₃-xPbTiO₃ and (1-x)Pb(Er₁/2Nb₁/2)O₃-xPbTiO₃ solid solns. were obtained, their phase diagrams were detd. at room temp., and a series of basic electrophys. parameters were detd. as a function of temp. Pb(Er₁/2Nb₁/2)O₃ can be described as pseudo-monoclinic (actual symmetry orthorhombic space group Bmm2), with a = b 4.2161, c 4.0869 Å, and β 90.55°. The compd. is an antiferroelec. with phase transition to paraelec. phase at 305°. The corresponding solid soln. system has a morphotropic region at x = 0.4-0.6. For the (1-x)Pb(Lu₁/2Nb₁/2)O₃-xPbTiO₃ solid soln., the structure changes from pseudo-monoclinic (x < 0.38) through pseudo-cubic (x ≈ 0.2) to tetragonal P4mm (x > 0.49). The morphotropic region comprises x = 0.38-0.41. At the boundary of the morphotropic region x ≈ 0.41 the solid soln. has the max. value of the electromech. coupling coeffs.: k_p = 0.66, k_t = 0.48, and k₃₁ = 0.35.

IT 233686-03-8, Erbium lead niobium titanium oxide (Er_{0.5}PbNb_{0.5}TiO₃)

RL: PRP (Properties)

(structural and elec. properties of)

RN 233686-03-8 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.5}PbNb_{0.5}TiO₃) (9CI)
(CA INDEX NAME)

Component		Ratio		Component
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		Registry Number
O	3	17778-80-2
Er	0 - 0.5	7440-52-0
Ti	0 - 1	7440-32-6
Nb	0 - 0.5	7440-03-1
Pb	1	7439-92-1

IT 233685-93-3, Erbium lead niobium titanium oxide
 (Er_{0.45}PbNb_{0.45}Ti_{0.10}O₃) 233685-94-4, Erbium lead niobium
 titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.20}O₃) 233685-95-5, Erbium
 lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.30}O₃)
 233685-96-6, Erbium lead niobium titanium oxide
 (Er_{0.32}PbNb_{0.32}Ti_{0.36}O₃) 233685-97-7, Erbium lead niobium
 titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.40}O₃) 233685-98-8, Erbium
 lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.41}O₃)
 233685-99-9, Erbium lead niobium titanium oxide
 (Er_{0.25}PbNb_{0.25}Ti_{0.50}O₃) 233686-00-5, Erbium lead niobium
 titanium oxide (Er_{0.2}PbNb_{0.2}Ti_{0.60}O₃) 233686-01-6, Erbium
 lead niobium titanium oxide (Er_{0.15}PbNb_{0.15}Ti_{0.70}O₃)
 233686-02-7, Erbium lead niobium titanium oxide
 (Er_{0.1}PbNb_{0.1}Ti_{0.80}O₃)

RL: PRP (Properties)

(structural and electrophys. properties of)

RN 233685-93-3 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.45}PbNb_{0.45}Ti_{0.10}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Er	0.45	7440-52-0
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 233685-94-4 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.4}PbNb_{0.4}Ti_{0.20}O₃) (9CI) (CA
 INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Er	0.4	7440-52-0
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 233685-95-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}Ti_{0.30}O₃) (9CI)

(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.35	7440-52-0
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 233685-96-6 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.32}PbNb_{0.32}Ti_{0.36}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.32	7440-52-0
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Pb	1	7439-92-1

RN 233685-97-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.4}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.3	7440-52-0
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 233685-98-8 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}Ti_{0.41}O₃) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Er	0.3	7440-52-0
Ti	0.41	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 233685-99-9 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.25}PbNb_{0.25}Ti_{0.5}O₃) (9CI)

(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Er	0.25	7440-52-0
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 233686-00-5 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.2}PbNb_{0.2}Ti_{0.6}O₃) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Er	0.2	7440-52-0
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 233686-01-6 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.15}PbNb_{0.15}Ti_{0.7}O₃) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Er	0.15	7440-52-0
Ti	0.7	7440-32-6
Nb	0.15	7440-03-1
Pb	1	7439-92-1

RN 233686-02-7 HCAPLUS

CN Erbium lead niobium titanium oxide (Er_{0.1}PbNb_{0.1}Ti_{0.8}O₃) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Er	0.1	7440-52-0
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
Section cross-reference(s): 75, 76, 78

- IT **Ferroelectric transition**
(antiferroelec.; of erbium lead niobate)
- IT 233686-03-8, Erbium lead niobium titanium oxide
(Er_{0.5}PbNb_{0.5}TiO₃)
RL: PRP (Properties)
(structural and elec. properties of)
- IT 233685-93-3, Erbium lead niobium titanium oxide
(Er_{0.45}PbNb_{0.45}TiO₃) 233685-94-4, Erbium lead niobium
titanium oxide (Er_{0.4}PbNb_{0.4}TiO₃) 233685-95-5, Erbium
lead niobium titanium oxide (Er_{0.35}PbNb_{0.35}TiO₃)
233685-96-6, Erbium lead niobium titanium oxide
(Er_{0.32}PbNb_{0.32}TiO₃) 233685-97-7, Erbium lead niobium
titanium oxide (Er_{0.3}PbNb_{0.3}TiO₃) 233685-98-8, Erbium
lead niobium titanium oxide (Er_{0.3}PbNb_{0.3}TiO₃)
233685-99-9, Erbium lead niobium titanium oxide
(Er_{0.25}PbNb_{0.25}TiO₃) 233686-00-5, Erbium lead niobium
titanium oxide (Er_{0.2}PbNb_{0.2}TiO₃) 233686-01-6, Erbium
lead niobium titanium oxide (Er_{0.15}PbNb_{0.15}TiO₃)
233686-02-7, Erbium lead niobium titanium oxide
(Er_{0.1}PbNb_{0.1}TiO₃)
RL: PRP (Properties)
(structural and electrophys. properties of)
- L20 ANSWER 23 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
1997:310498 Document No. 127:11892 **Ferroelectric** and
crystallographic properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ solid
solution system. Yamamoto, Takashi; Ohashi, Satoru; Hisano, Kumao
(Department Electrical Engineering, National Defense Academy,
Yokosuka, 239, Japan). Ferroelectrics, 196(1-4), 281-284 (English)
1997. CODEN: FEROA8. ISSN: 0015-0193. Publisher: Gordon & Breach.
- AB (1-X)Pb(Yb_{1/2}Nb_{1/2})O₃-(x)PbTiO₃, x = 0-0.8 solid solns. were
investigated from the viewpoint of **ferroelec.** and
crystallog. properties. With increasing PbTiO₃ content (x), phases
at room temp. successively changed from antiferroelec. (x = 0) to
ferroelec. (x = 0.05-0.15), relaxor (x = 0.2-0.5), and again
to **ferroelec.** (x > 0.5). Dielec. properties are discussed
with order-disorder transformation as a function of PbTiO₃ content
x.
- IT 170965-35-2, Lead niobium titanium ytterbium oxide
(PbNb_{0.45}Ti_{0.1}Yb_{0.45}O₃) 170965-38-5, Lead niobium titanium
ytterbium oxide (PbNb_{0.4}Ti_{0.2}Yb_{0.4}O₃) 170965-39-6, Lead
niobium titanium ytterbium oxide (PbNb_{0.35}Ti_{0.3}Yb_{0.35}O₃)
170965-40-9, Lead niobium titanium ytterbium oxide
(PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) 170965-44-3, Lead niobium titanium
ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) 170965-48-7, Lead
niobium titanium ytterbium oxide (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃)
170965-49-8, Lead niobium titanium ytterbium oxide
(PbNb_{0.1}Ti_{0.8}Yb_{0.1}O₃)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
(**ferroelec.** and order-disorder transitions of the
Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ solid soln. system)

RN 170965-35-2 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.45Ti0.1Yb0.45O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.45	7440-64-4
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 170965-38-5 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.4Ti0.2Yb0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.4	7440-64-4
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 170965-39-6 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.35Ti0.3Yb0.35O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.35	7440-64-4
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 170965-48-7 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.2Ti0.6Yb0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.2	7440-64-4
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 170965-49-8 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.1Ti0.8Yb0.1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.1	7440-64-4
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

IT 170965-34-1, Lead niobium titanium ytterbium oxide
(PbNb0.48Ti0.05Yb0.48O3)RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
(ferroelec. transitions and sp. heat of)

RN 170965-34-1 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.48Ti0.05Yb0.48O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Yb	0.48	7440-64-4
Ti	0.05	7440-32-6
Nb	0.48	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 69, 75

ST **ferroelec** transition lead ytterbium niobate titanate;
order disorder lead ytterbium niobate titanate

IT Curie temperature (**ferroelectric**)

Dielectric constant

Ferroelectric transition

Heat capacity

Order-disorder transition

(of the $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ solid soln. system)

IT 170965-35-2, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.45}\text{Ti}_{0.1}\text{Yb}_{0.45}\text{O}_3$) 170965-38-5, Lead niobium titanium
ytterbium oxide ($\text{PbNb}_{0.4}\text{Ti}_{0.2}\text{Yb}_{0.4}\text{O}_3$) 170965-39-6, Lead
niobium titanium ytterbium oxide ($\text{PbNb}_{0.35}\text{Ti}_{0.3}\text{Yb}_{0.35}\text{O}_3$)
170965-40-9, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{Yb}_{0.3}\text{O}_3$) 170965-44-3, Lead niobium titanium
ytterbium oxide ($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$) 170965-48-7, Lead
niobium titanium ytterbium oxide ($\text{PbNb}_{0.2}\text{Ti}_{0.6}\text{Yb}_{0.2}\text{O}_3$)
170965-49-8, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.1}\text{Ti}_{0.8}\text{Yb}_{0.1}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)

(**ferroelec.** and order-disorder transitions of the
 $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ solid soln. system)

IT 170965-34-1, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.48}\text{Ti}_{0.05}\text{Yb}_{0.48}\text{O}_3$)

RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)

(**ferroelec.** transitions and sp. heat of)

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1996:631577 Document No. 125:312836 Structural phase transition in
La-substituted $\text{Pb}[(\text{Yb}_{1/2}\text{Nb}_{1/2})_{0.88}\text{Ti}_{0.12}]\text{O}_3$ relaxor system. Im, Ki
Vin; Choo, Woong Kil; Choo, Carolyn Kyoungshin Koh (Dep. Materials
Eng., Korea Advanced Inst. Sci. Technol., Taejon, 305-701, S.
Korea). Japanese Journal of Applied Physics, Part 1: Regular
Papers, Short Notes & Review Papers, 35(9B), 5217-5219 (English)
1996. CODEN: JAPNDE. ISSN: 0021-4922. Publisher: Japanese Journal
of Applied Physics.

AB The effect of substitution of $\text{La}_2\text{O}_3 + \text{Yb}_2\text{O}_3$ to the perovskite solid
soln. near the compn. $(\text{PbYb}_{1/2}\text{Nb}_{1/2}\text{O}_3)_{0.88}\text{-(PbTiO}_3)_{0.12}$ in the chem.
formula $(1-x)[(\text{PbYb}_{1/2}\text{Nb}_{1/2}\text{O}_3)_{0.88}(\text{PbTiO}_3)_{0.12}] - x\text{LaYbO}_3$ was studied.
When $x = 0.0$ and $x = 0.01$, these solid solns. have partially
disordered pseudocubic structure and behave as a **ferroelec**
. relaxor. For $x \geq 0.02$, the character of phase transition
changes from a **ferroelec.** relaxor type to an
antiferroelec. one and the transition temp. surprisingly increases

with LaYbO₃ addn. In this compn. range, the solid soln. displays a sharp antiferroelec. transition. The effect on the tendency toward antiferroelec. with increasing LaYbO₃ content is displayed in restoring of the superlattice reflections due to antiferroelec. order. From the structural study of ceramic specimens having various PbTiO₃ and LaYbO₃ concns., a portion of the phase diagram of the pseudo-ternary PbYb_{1/2}Nb_{1/2}O₃-PbTiO₃-LaYbO₃ system was constructed.

IT 183062-34-2, Lead niobium titanium ytterbium oxide
(PbNb_{0.44}Ti_{0.12}Yb_{0.44}O₃)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
(crystal structure and phase transitions in)
RN 183062-34-2 HCAPLUS
CN Lead niobium titanium ytterbium oxide (PbNb_{0.44}Ti_{0.12}Yb_{0.44}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.44	7440-64-4
Ti	0.12	7440-32-6
Nb	0.44	7440-03-1
Pb	1	7439-92-1

CC 75-7 (Crystallography and Liquid Crystals)
Section cross-reference(s): 68, 76
ST lanthanum lead ytterbium niobate titanate structure; phase
transition lanthanum lead ytterbium niobatetitanate;
ferroelec transition lanthanum lead ytterbium
niobatetitanate
IT **Ferroelectricity**
(anti-, transition in lead ytterbium niobate-lead
titanate-lanthanum ytterbium oxide solid solns.)
IT **Ferroelectric** substances
(relaxor, crystal structure and structural transition in lead
ytterbium niobate-lead titanate-lanthanum ytterbium oxide solid
solns.)
IT 183062-34-2, Lead niobium titanium ytterbium oxide
(PbNb_{0.44}Ti_{0.12}Yb_{0.44}O₃) 183062-35-3 183062-37-5 183062-39-7
183062-41-1 183062-43-3 183062-45-5 183062-48-8
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
(crystal structure and phase transitions in)

L20 ANSWER 25 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
1996:631551 Document No. 126:25573 **Ferroelectricity** and
phase relations in the system Pb(Yb_{1/2}Nb_{1/2})O₃-PbZrO₃. Yokosuka,
Masaru; Imazeki, Ken-ichi (Fac. Sci. Eng., Iwaki-Meisei Univ.,
Fukushima, 970, Japan). Japanese Journal of Applied Physics, Part
1: Regular Papers, Short Notes & Review Papers, 35(9B), 5109-5112

(English) 1996. CODEN: JAPNDE. ISSN: 0021-4922. Publisher: Japanese Journal of Applied Physics.

AB The phase diagram was detd. for the entire compn. range or the system $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbZrO}_3$. Despite the fact that both end members $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ and PbZrO_3 are antiferroelec., a ferroelec. phase appears for a narrow compn. range, and its nature is briefly discussed. The phase diagram consists of the three phases: paraelec. (PE) cubic, ferroelec. (FE) tetragonal and antiferroelec. (ARE) orthorhombic. An insol. region is obsd.

IT 184363-29-9, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.1}\text{Yb}_{0.1}\text{Zr}_{0.8}\text{O}_3$) 184363-31-3, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.45}\text{Yb}_{0.45}\text{Zr}_{0.1}\text{O}_3$) 184363-33-5, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.16}\text{Yb}_{0.16}\text{Zr}_{0.68}\text{O}_3$) 184363-35-7, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.05}\text{Yb}_{0.05}\text{Zr}_{0.9}\text{O}_3$) 184363-38-0, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.15}\text{Yb}_{0.15}\text{Zr}_{0.7}\text{O}_3$) 184363-40-4, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.18}\text{Yb}_{0.18}\text{Zr}_{0.65}\text{O}_3$) 184363-42-6, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.2}\text{Yb}_{0.2}\text{Zr}_{0.6}\text{O}_3$) 184363-44-8, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.3}\text{Yb}_{0.3}\text{Zr}_{0.4}\text{O}_3$) 184363-46-0, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.35}\text{Yb}_{0.35}\text{Zr}_{0.3}\text{O}_3$) 184363-48-2, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.4}\text{Yb}_{0.4}\text{Zr}_{0.2}\text{O}_3$) 184363-50-6, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.11}\text{Yb}_{0.11}\text{Zr}_{0.78}\text{O}_3$) 184363-52-8, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.12}\text{Yb}_{0.12}\text{Zr}_{0.75}\text{O}_3$) 184363-54-0, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.14}\text{Yb}_{0.14}\text{Zr}_{0.72}\text{O}_3$) 184363-56-2, Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.19}\text{Yb}_{0.19}\text{Zr}_{0.62}\text{O}_3$)

RL: PRP (Properties)

(ferroelectricity of)

RN 184363-29-9 HCAPLUS

CN Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.1}\text{Yb}_{0.1}\text{Zr}_{0.8}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		
O	3	17778-80-2
Zr	0.8	7440-67-7
Yb	0.1	7440-64-4
Nb	0.1	7440-03-1
Pb	1	7439-92-1

RN 184363-31-3 HCAPLUS

CN Lead niobium ytterbium zirconium oxide ($\text{PbNb}_{0.45}\text{Yb}_{0.45}\text{Zr}_{0.1}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====+=====+=====		

O	3	17778-80-2
Zr	0.1	7440-67-7
Yb	0.45	7440-64-4
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 184363-33-5 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.16Yb0.16Zr0.68O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.68	7440-67-7
Yb	0.16	7440-64-4
Nb	0.16	7440-03-1
Pb	1	7439-92-1

RN 184363-35-7 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.05Yb0.05Zr0.9O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.9	7440-67-7
Yb	0.05	7440-64-4
Nb	0.05	7440-03-1
Pb	1	7439-92-1

RN 184363-38-0 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.15Yb0.15Zr0.7O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.7	7440-67-7
Yb	0.15	7440-64-4
Nb	0.15	7440-03-1
Pb	1	7439-92-1

RN 184363-40-4 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.18Yb0.18Zr0.65O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	3	17778-80-2
Zr	0.65	7440-67-7
Yb	0.18	7440-64-4
Nb	0.18	7440-03-1
Pb	1	7439-92-1

RN 184363-42-6 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.2Yb0.2Zr0.6O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.6	7440-67-7
Yb	0.2	7440-64-4
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 184363-44-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.3Yb0.3Zr0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.4	7440-67-7
Yb	0.3	7440-64-4
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 184363-46-0 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.35Yb0.35Zr0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.3	7440-67-7
Yb	0.35	7440-64-4
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 184363-48-2 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.4Yb0.4Zr0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	3	17778-80-2
Zr	0.2	7440-67-7
Yb	0.4	7440-64-4
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 184363-50-6 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.11Yb0.11Zr0.78O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.78	7440-67-7
Yb	0.11	7440-64-4
Nb	0.11	7440-03-1
Pb	1	7439-92-1

RN 184363-52-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.12Yb0.12Zr0.75O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.75	7440-67-7
Yb	0.12	7440-64-4
Nb	0.12	7440-03-1
Pb	1	7439-92-1

RN 184363-54-0 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.14Yb0.14Zr0.72O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.72	7440-67-7
Yb	0.14	7440-64-4
Nb	0.14	7440-03-1
Pb	1	7439-92-1

RN 184363-56-2 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb0.19Yb0.19Zr0.62O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	3	17778-80-2
Zr	0.62	7440-67-7
Yb	0.19	7440-64-4
Nb	0.19	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57, 68

ST lead niobate ytterbate zirconate **ferroelectricity**; phase diagram lead niobate ytterbate zirconate

IT Dielectric constant

Ferroelectricity

Piezoelectricity

(of lead niobate ytterbate zirconate)

IT 184363-29-9, Lead niobium ytterbium zirconium oxide (PbNb0.1Yb0.1Zr0.8O3) 184363-31-3, Lead niobium ytterbium zirconium oxide (PbNb0.45Yb0.45Zr0.1O3) 184363-33-5, Lead niobium ytterbium zirconium oxide (PbNb0.16Yb0.16Zr0.68O3) 184363-35-7, Lead niobium ytterbium zirconium oxide (PbNb0.05Yb0.05Zr0.9O3) 184363-38-0, Lead niobium ytterbium zirconium oxide (PbNb0.15Yb0.15Zr0.7O3) 184363-40-4, Lead niobium ytterbium zirconium oxide (PbNb0.18Yb0.18Zr0.65O3) 184363-42-6, Lead niobium ytterbium zirconium oxide (PbNb0.2Yb0.2Zr0.6O3) 184363-44-8, Lead niobium ytterbium zirconium oxide (PbNb0.3Yb0.3Zr0.4O3) 184363-46-0, Lead niobium ytterbium zirconium oxide (PbNb0.35Yb0.35Zr0.3O3) 184363-48-2, Lead niobium ytterbium zirconium oxide (PbNb0.4Yb0.4Zr0.2O3) 184363-50-6, Lead niobium ytterbium zirconium oxide (PbNb0.11Yb0.11Zr0.78O3) 184363-52-8, Lead niobium ytterbium zirconium oxide (PbNb0.12Yb0.12Zr0.75O3) 184363-54-0, Lead niobium ytterbium zirconium oxide (PbNb0.14Yb0.14Zr0.72O3) 184363-56-2, Lead niobium ytterbium zirconium oxide (PbNb0.19Yb0.19Zr0.62O3)
 RL: PRP (Properties)
 (ferroelectricity of)

L20 ANSWER 26 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1995:877773 Document No. 123:356375 Dielectric and piezoelectric properties of Pb(Yb₁/2Nb₁/2)O₃-PbTiO₃ solid solution system. Yamamoto, Takashi; Ohashi, Satoru (Department of Electrical Engineering, The National Defense Academy, Yokosuka, 239, Japan). Japanese Journal of Applied Physics, Part 1: Regular Papers, Short Notes & Review Papers, 34(9B), 5349-53 (English) 1995. CODEN: JAPNDE. ISSN: 0021-4922. Publisher: Japanese Journal of Applied Physics.

AB Solid solns. of (1-x)Pb(Yb₁/2Nb₁/2)O₃-(x)PbTiO₃ x = 0 to 0.8 were studied from the viewpoint of dielec. and piezoelec. properties. With increasing PbTiO₃ content (x), phases at room temp. continuously changed from antiferroelec. (x = 0), **ferroelec.** (x = 0.1 to 0.15), relaxor (x = 0.2 to 0.49), and again to **ferroelec.** (x > 0.49), where crystal structures of all these

phases were perovskite. Sintering temp. was lowered to around 950° in the relaxor phase ($x = 0.2$ to 0.49). Piezoelec. const. exhibited a max. at $x = 0.49$ to 0.50 near the morphotropic phase boundary ($x = 0.49$). In the sample with $x = 0.50$, Curie point was 349°, and remanent polarization and coercive field were 32.8 $\mu\text{C}/\text{cm}^2$ and 2.75 kV/mm, resp.

IT 170965-34-1, Lead niobium titanium ytterbium oxide (PbNb_{0.48}Ti_{0.05}Yb_{0.48}O₃) 170965-35-2, Lead niobium titanium ytterbium oxide (PbNb_{0.45}Ti_{0.1}Yb_{0.45}O₃) 170965-36-3, Lead niobium titanium ytterbium oxide (PbNb_{0.42}Ti_{0.15}Yb_{0.42}O₃) 170965-37-4, Lead niobium titanium ytterbium oxide (PbNb_{0.41}Ti_{0.18}Yb_{0.41}O₃) 170965-38-5, Lead niobium titanium ytterbium oxide (PbNb_{0.4}Ti_{0.2}Yb_{0.4}O₃) 170965-39-6, Lead niobium titanium ytterbium oxide (PbNb_{0.35}Ti_{0.3}Yb_{0.35}O₃) 170965-40-9, Lead niobium titanium ytterbium oxide (PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) 170965-41-0, Lead niobium titanium ytterbium oxide (PbNb_{0.28}Ti_{0.45}Yb_{0.28}O₃) 170965-42-1, Lead niobium titanium ytterbium oxide (PbNb_{0.26}Ti_{0.48}Yb_{0.26}O₃) 170965-43-2, Lead niobium titanium ytterbium oxide (PbNb_{0.26}Ti_{0.49}Yb_{0.26}O₃) 170965-44-3, Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) 170965-45-4, Lead niobium titanium ytterbium oxide (PbNb_{0.24}Ti_{0.51}Yb_{0.24}O₃) 170965-46-5, Lead niobium titanium ytterbium oxide (PbNb_{0.24}Ti_{0.52}Yb_{0.24}O₃) 170965-47-6, Lead niobium titanium ytterbium oxide (PbNb_{0.22}Ti_{0.55}Yb_{0.22}O₃) 170965-48-7, Lead niobium titanium ytterbium oxide (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃) 170965-49-8, Lead niobium titanium ytterbium oxide (PbNb_{0.1}Ti_{0.8}Yb_{0.1}O₃)
 RL: PRP (Properties)
 (dielec. and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ solid soln. system)
 RN 170965-34-1 HCAPLUS
 CN Lead niobium titanium ytterbium oxide (PbNb_{0.48}Ti_{0.05}Yb_{0.48}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.48	7440-64-4
Ti	0.05	7440-32-6
Nb	0.48	7440-03-1
Pb	1	7439-92-1

RN 170965-35-2 HCAPLUS
 CN Lead niobium titanium ytterbium oxide (PbNb_{0.45}Ti_{0.1}Yb_{0.45}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Yb	0.45	7440-64-4
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Pb	1	7439-92-1

RN 170965-36-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.42Ti0.15Yb0.42O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.42	7440-64-4
Ti	0.15	7440-32-6
Nb	0.42	7440-03-1
Pb	1	7439-92-1

RN 170965-37-4 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.41Ti0.18Yb0.41O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.41	7440-64-4
Ti	0.18	7440-32-6
Nb	0.41	7440-03-1
Pb	1	7439-92-1

RN 170965-38-5 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.4Ti0.2Yb0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.4	7440-64-4
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Pb	1	7439-92-1

RN 170965-39-6 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.35Ti0.3Yb0.35O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Yb	0.35	7440-64-4
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Pb	1	7439-92-1

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-41-0 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.28Ti0.45Yb0.28O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.28	7440-64-4
Ti	0.45	7440-32-6
Nb	0.28	7440-03-1
Pb	1	7439-92-1

RN 170965-42-1 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.26Ti0.48Yb0.26O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Yb	0.26	7440-64-4
Ti	0.48	7440-32-6
Nb	0.26	7440-03-1
Pb	1	7439-92-1

RN 170965-43-2 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.26Ti0.49Yb0.26O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2

Yb	0.26	7440-64-4
Ti	0.49	7440-32-6
Nb	0.26	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 170965-45-4 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.24Ti0.51Yb0.24O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.51	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

RN 170965-46-5 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.24Ti0.52Yb0.24O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.52	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

RN 170965-47-6 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.22Ti0.55Yb0.22O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2

Yb	0.22	7440-64-4
Ti	0.55	7440-32-6
Nb	0.22	7440-03-1
Pb	1	7439-92-1

RN 170965-48-7 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.2Ti0.6Yb0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.2	7440-64-4
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 170965-49-8 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.1Ti0.8Yb0.1O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.1	7440-64-4
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

CC 76-9 (Electric Phenomena)

ST lead ytterbium niobate titanate dielec const; piezoelectricity
dielec polarization oxide; Curie point **ferroelec** oxideIT **Ferroelectricity**(Curie point, dielec. and piezoelec. properties of
Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ solid soln. system)IT **Ferroelectricity**(anti-, dielec. and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-
PbTiO₃ solid soln. system)

IT 12034-65-0, Lead niobium ytterbium oxide (PbNb0.5Yb0.5O3)

170965-34-1, Lead niobium titanium ytterbium oxide

(PbNb0.48Ti0.05Yb0.48O3) 170965-35-2, Lead niobium

titanium ytterbium oxide (PbNb0.45Ti0.1Yb0.45O3) 170965-36-3

, Lead niobium titanium ytterbium oxide (PbNb0.42Ti0.15Yb0.42O3)

170965-37-4, Lead niobium titanium ytterbium oxide

(PbNb0.41Ti0.18Yb0.41O3) 170965-38-5, Lead niobium

titanium ytterbium oxide (PbNb0.4Ti0.2Yb0.4O3) 170965-39-6

, Lead niobium titanium ytterbium oxide (PbNb0.35Ti0.3Yb0.35O3)

170965-40-9, Lead niobium titanium ytterbium oxide

(PbNb0.3Ti0.4Yb0.3O3) 170965-41-0, Lead niobium titanium

ytterbium oxide (PbNb0.28Ti0.45Yb0.28O3) 170965-42-1, Lead

niobium titanium ytterbium oxide (PbNb_{0.26}Ti_{0.48}Yb_{0.26}O₃)
 170965-43-2, Lead niobium titanium ytterbium oxide
 (PbNb_{0.26}Ti_{0.49}Yb_{0.26}O₃) 170965-44-3, Lead niobium
 titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) 170965-45-4
 , Lead niobium titanium ytterbium oxide (PbNb_{0.24}Ti_{0.51}Yb_{0.24}O₃)
 170965-46-5, Lead niobium titanium ytterbium oxide
 (PbNb_{0.24}Ti_{0.52}Yb_{0.24}O₃) 170965-47-6, Lead niobium
 titanium ytterbium oxide (PbNb_{0.22}Ti_{0.55}Yb_{0.22}O₃)
 170965-48-7, Lead niobium titanium ytterbium oxide
 (PbNb_{0.2}Ti_{0.6}Yb_{0.2}O₃) 170965-49-8, Lead niobium titanium
 ytterbium oxide (PbNb_{0.1}Ti_{0.8}Yb_{0.1}O₃)

RL: PRP (Properties)

(dielec. and piezoelec. properties of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃
 solid soln. system)

L20 ANSWER 27 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1994:643202 Document No. 121:243202 **Ferroelectricity** of
 solid solution Pb[(Yb_{1/2}Nb_{1/2})_{1/3}Zr_{2/3}]O₃. Yokosuka, Masaru
 (Iwaki-Meisei Univ., Iwaki, 970, Japan). Japanese Journal of
 Applied Physics, Part 2: Letters, 33(8A), L1100-L1102 (English)
 1994. CODEN: JAPLD8. ISSN: 0021-4922.

AB Studies were conducted on the **ferroelec.** properties of
 Pb[(Yb_{1/2}Nb_{1/2})_{1/3}Zr_{2/3}]O₃ which is considered to be a solid soln.
 consisting of antiferroelec. compds., Pb(Yb_{1/2}Nb_{1/2})O₃ and PbZrO₃,
 in the mole ratio of 1:2. The crystal structure was detd. to be
 perovskite type of tetragonal symmetry with lattice consts. a_T
 = 4.158 Å and c_T = 4.116 Å. The Curie temp. was found to be
 150°. The remanent polarization, P_r = 6.8 µC/cm², and
 the electromech. coupling factor, k_{33} = 0.20, were obtained at room
 temp. Finally, the nature of the **ferroelectricity** of
 Pb[(Yb_{1/2}Nb_{1/2})_{1/3}Zr_{2/3}]O₃ was briefly discussed.

IT 158611-92-8, Lead niobium ytterbium zirconium oxide
 (PbNb_{0.17}Yb_{0.17}Zr_{0.67}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PROC (Process)

(**ferroelectricity** of solid soln. of)

RN 158611-92-8 HCAPLUS

CN Lead niobium ytterbium zirconium oxide (PbNb_{0.17}Yb_{0.17}Zr_{0.67}O₃)
 (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.67	7440-67-7
Yb	0.17	7440-64-4
Nb	0.17	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 75

ST **ferroelectricity** lead niobium ytterbium zirconium oxide;

crystal structure niobate zirconate; dielec polarization remanent
piezoelectricity oxide

IT Crystal structure
Dielectric polarization
 Ferroelectricity
Piezoelectricity
 (of solid soln. of lead niobium ytterbium zirconium oxide)

IT 12034-65-0, Lead niobium ytterbium oxide pbnb0.5yb0.5o3
12060-01-4, Lead zirconate pbzro3
RL: PRP (Properties)
 (ferroelectricity of solid soln. contg.)

IT 158611-92-8, Lead niobium ytterbium zirconium oxide
(PbNb0.17Yb0.17Zr0.67O3)
RL: PEP (Physical, engineering or chemical process); PRP
(Properties); PROC (Process)
 (ferroelectricity of solid soln. of)

L20 ANSWER 28 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN
1977:114199 Document No. 86:114199 Basic physicochemical principles
for the production of inorganic dielectrics for high-frequency
ceramic capacitors. Lisker, K. E.; Mudrolyubova, L. P.; Rotenberg,
B. A. (USSR). Sb. Ref. - Vses. Konf. "Fiz. Dielektr. Perspekt. Ee
Razvit.", Meeting Date 1973, Volume 2, 45-6. Editor(s): Koikov, S.
N.; Semushkin, G. B. Leningr. Politekh. Inst.: Leningr., USSR.
(Russian) 1974. CODEN: 34RHA7.

AB Study of the dielec. properties of compds. of the type
(A',A')(B',B')O7 showed that these compds. with pyrochlore structure
had high dielec. consts. (ϵ) and large neg. temp. coeffs. of
 ϵ , whereas those with LiTa2O7-type structure had temp.
coeffs. close to zero. High ϵ and low temp. coeffs. were
obtained for compds. which are **ferroelecs.** with diffuse
phase transitions. Low dielec. losses at radio frequencies can be
obtained by prepg. the compds. by copptn. methods, which produced a
more ordered structure.

IT 37347-35-6
RL: PRP (Properties)
 (dielec. properties of, as capacitor insulator)

RN 37347-35-6 HCAPLUS
CN Lead neodymium niobium titanium oxide (PbNdNbTiO7) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Nd	1	7440-00-8
Pb	1	7439-92-1

CC 76-3 (Electric Phenomena)
IT 12031-47-9 12049-50-2 12658-80-9 12658-81-0 37347-35-6

57674-32-5 62228-77-7 62228-87-9 62228-90-4 62228-93-7

RL: PRP (Properties)

(dielec. properties of, as capacitor insulator)

L20 ANSWER 29 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1976:598949 Document No. 85:198949 Study of a tetrahedral cross section of compositions of the lead oxide-potassium fluoride-boron oxide-lead neodymium titanium niobium oxide (PbNdTiNbO₇) system. Belyaev, I. N.; Evstifeev, E. N. (Rostov.-na-Donu Gos. Univ., Rostov-on-Don, USSR). Izvestiya Akademii Nauk SSSR, Neorganicheskie Materialy, 12(9), 1702-4 (Russian) 1976. CODEN: IVNMAW. ISSN: 0002-337X.

AB The dissoln. and growth of PbNdTiNbO₇ (ferroelec. and piezoelec. material) in PbO-KF-B₂O₃ flux was studied by visual-polythermal and x-ray phase anal. methods at 680-1100°. Temps. and compns. of polymorphic transition and ternary invariant points are given. PbNdTiNbO₇ can be prepd. in this flux at 700-900° (instead of solid phase reaction at 1000-1100°).

IT 37347-35-6

RL: PEP (Physical, engineering or chemical process); PROC (Process) (dissoln. of, in boron oxide-lead oxide-potassium fluoride flux)

RN 37347-35-6 HCAPLUS

CN Lead neodymium niobium titanium oxide (PbNdNbTiO₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Nd	1	7440-00-8
Pb	1	7439-92-1

CC 68-1 (Phase Equilibriums, Chemical Equilibriums, and Solutions)
Section cross-reference(s): 75, 76

IT 37347-35-6

RL: PEP (Physical, engineering or chemical process); PROC (Process) (dissoln. of, in boron oxide-lead oxide-potassium fluoride flux)

L20 ANSWER 30 OF 30 HCAPLUS COPYRIGHT 2006 ACS on STN

1975:540605 Document No. 83:140605 Ferroelectric properties of bismuth lead niobium zirconium oxide (PbBiZrNbO₇) with pyrochlore type structure. Belyaev, I. N.; Fesenko, E. G.; Peresun'ko, A. F.; Cherner, Ya. E. (Rostov.-na-Donu Gos. Univ., Rostov-on-Don, USSR). Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, 39(5), 1103-4 (Russian) 1975. CODEN: IANFAY. ISSN: 0367-6765.

AB PbBiTiNbO₇ (I), PbDyTiNbO₇ (II), and PbBiZrNbO₇ (III) showed max. on the temp. dependences of permittivity and tan ε (ε is the dielec. loss angle). I, II, and III are positioned in the centers of concn. tetrahedrons corresponding to PbO-A₂O₃-B₂O₃-Nb₂O₅

(A = Bi or Dy; B = Ti or Zr). The x-ray phase and thermal analyses and single-crystal investigations indicated that I, II and III are individual substances and not solid solns. based on simple pyrochlores or pyrochlore-like compns. All the substances have a cubic pyrochlore cell, only III shows a slight tetragonal distortion. Temps. of prepn. and sintering and the relevant x-ray and dielec. data are tabulated. The information allows one to consider III a **ferroelec.** material.

IT 56940-92-2

RL: PRP (Properties)

(dielec. const. and loss of, temp. dependence of)

RN 56940-92-2 HCAPLUS

CN Dysprosium lead niobium titanium oxide (DyPbNbTiO7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Pb	1	7439-92-1
Dy	1	7429-91-6

CC 76-6 (Electric Phenomena)

Section cross-reference(s): 75

ST bismuth lead zirconium niobate **ferroelec**

IT **Ferroelectricity**

(of bismuth lead zirconium niobate)

IT 12654-65-8 56940-72-8 **56940-92-2**

RL: PRP (Properties)

(dielec. const. and loss of, temp. dependence of)

=> d l22 cbib abs hitstr hitind 1-10

L22 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

2005:257797 Document No. 142:439701 Dielectric nonlinearity of Pb(Yb_{1/2}Nb_{1/2})O₃-PbTiO₃ thin films with {100} and {111} crystallographic orientation. Gharb, N. Bassiri; Troler-McKinstry, S. (Materials Research Institute and Materials Science and Engineering Department, The Pennsylvania State University, University Park, PA, 16802, USA). *Journal of Applied Physics*, 97(6), 064106/1-064106/7 (English) **2005**. CODEN: JAPIAU. ISSN: 0021-8979. Publisher: American Institute of Physics.

AB The extrinsic contributions to the dielec. response of 0.5Pb(Yb_{1/2}Nb_{1/2})O₃-0.5PbTiO₃ thin films with (100) or (111) crystallog. orientation were studied (all indexes are given in terms of the pseudocubic cell). Both the nonlinearity in the permittivity as well as the polarization hysteresis are described by the Rayleigh Law in subswitching conditions. (100) Oriented films show a slightly higher extrinsic contribution to their dielec. behavior

than (111) oriented films. For example, at 1 kHz and oscillation fields of 20 kV/cm, for (100) and (111) oriented films, resp., 25% and 21% of the relative dielec. const. is due to irreversible extrinsic contributions. The difference is attributed to the higher concn. of mobile interfaces in the (100) oriented thin films. For frequencies between 20 Hz and 200 kHz both the Rayleigh parameters dropped with frequency approx. logarithmically. The frequency dependent Rayleigh parameters were used to modify the Rayleigh Law to allow prediction of the dielec. properties in terms of both oscillation field and frequency.

IT 170965-44-3, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$)

RL: PRP (Properties)

(dielec. nonlinearity of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ thin films with {100} and {111} crystallog. orientation)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide ($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-9 (Electric Phenomena)

Section cross-reference(s): 75

IT 170965-44-3, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$)

RL: PRP (Properties)

(dielec. nonlinearity of $\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ thin films with {100} and {111} crystallog. orientation)

L22 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

2000:263628 Document No. 133:33455 Structure and properties of hot-pressed $\text{Pb}(\text{Lu}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-PbTiO}_3$ binary system ceramics. Antonova, M.; Shebanovs, L.; Livinsh, M.; Yamashita, J. Y.; Sternberg, A.; Shorubalko, I.; Spule, A. (Institute of Solid State Physics, University of Latvia, Riga, LV-1063, Latvia). Journal of Electroceramics, 4(1), 179-187 (English) 2000. CODEN: JOELFJ. ISSN: 1385-3449. Publisher: Kluwer Academic Publishers.

AB Solid soln. series of the $(1-x)\text{Pb}(\text{Lu}_{1/2}\text{Nb}_{1/2})\text{O}_3\text{-x PbTiO}_3$ binary system ceramics (PLuNT) were synthesized and hot-pressed (temp. 950°C to 1130°C, pressure 25 MPa); its structure, dielec. and piezoelec. properties were studied. Pure lutetium niobate PLuN ($x = 0$) has a pronounced long-range order in the B-sublattice and an antiferroelec. to paraelec. phase transition at apprx. 258°C. The phase structure of the PLuNT system, at room temp., changes from a pseudomonoclinic (psd-M, space group

Bmm2) to tetragonal (T, space group P4mm). The pseudomonoclinic phase extends over the $0 \leq x \leq 0.38$ interval within which the monoclinic angle β proceeds a min. near to 90° at $x \approx 0.2$. The morphotropic region covers the interval $x = 0.38-0.49$, the concn. ratio psd-M:T ≈ 1 (the morphotropic phase boundary-MPB) corresponds to $x = 0.41$. Within the morphotropic region, a rather strong distortion of the unit cell- $(c/a-1) \geq 0.02$, $\beta \geq 90.37^\circ$, characteristic of "hard" piezoelecs. is maintained. Dielec. dispersion and broadening of the phase transition, features typical to relaxors, are obsd. within the concn. interval of $0.1 \leq x \leq 0.3$. The highest electromech. coupling coeffs.: $k_p = 0.66$, $k_t = 0.48$, $k_{31} = 0.34$ of $(1-x)$ PLuN - x PT ceramics are attained in compns. near the MPB at $x \approx 0.41$. Non-isovalent doping of PLuNT with La^{3+} in Pb sublattice shifts the MPB to lower values of x .

IT 263872-43-1, Lead lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃) 263872-44-2, Lead lutetium niobium titanium oxide (PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) 273750-90-6, Lead lutetium niobium titanium oxide (PbLu_{0.35}Nb_{0.35}Ti_{0.30}O₃) 273750-91-7, Lead lutetium niobium titanium oxide (PbLu_{0.32}Nb_{0.32}Ti_{0.36}O₃) 273750-92-8, Lead lutetium niobium titanium oxide (PbLu_{0.3}Nb_{0.3}Ti_{0.4}O₃) 273750-93-9, Lead lutetium niobium titanium oxide (PbLu_{0.25}Nb_{0.25}Ti_{0.5}O₃) 273750-94-0, Lead lutetium niobium titanium oxide (PbLu_{0.2}Nb_{0.2}Ti_{0.6}O₃) 273750-95-1, Lead lutetium niobium titanium oxide (PbLu_{0.15}Nb_{0.15}Ti_{0.7}O₃) 273750-96-2, Lead lutetium niobium titanium oxide (PbLu_{0.1}Nb_{0.1}Ti_{0.8}O₃)
 RL: FMU (Formation, unclassified); PRP (Properties); FORM (Formation, nonpreparative)
 (structure and properties of hot-pressed Pb(Lu_{1/2}Nb_{1/2})O₃-PbTiO₃ binary system ceramics)
 RN 263872-43-1 HCAPLUS
 CN Lead lutetium niobium titanium oxide (PbLu_{0.45}Nb_{0.45}Ti_{0.10}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.1	7440-32-6
Nb	0.45	7440-03-1
Lu	0.45	7439-94-3
Pb	1	7439-92-1

RN 263872-44-2 HCAPLUS
 CN Lead lutetium niobium titanium oxide (PbLu_{0.4}Nb_{0.4}Ti_{0.2}O₃) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	3	17778-80-2
Ti	0.2	7440-32-6
Nb	0.4	7440-03-1
Lu	0.4	7439-94-3
Pb	1	7439-92-1

RN 273750-90-6 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.3	7440-32-6
Nb	0.35	7440-03-1
Lu	0.35	7439-94-3
Pb	1	7439-92-1

RN 273750-91-7 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.32Nb0.32Ti0.36O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.36	7440-32-6
Nb	0.32	7440-03-1
Lu	0.32	7439-94-3
Pb	1	7439-92-1

RN 273750-92-8 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Lu	0.3	7439-94-3
Pb	1	7439-92-1

RN 273750-93-9 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====

O	3	17778-80-2
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Lu	0.25	7439-94-3
Pb	1	7439-92-1

RN 273750-94-0 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.2Nb0.2Ti0.6O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Lu	0.2	7439-94-3
Pb	1	7439-92-1

RN 273750-95-1 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.15Nb0.15Ti0.7O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Ti	0.7	7440-32-6
Nb	0.15	7440-03-1
Lu	0.15	7439-94-3
Pb	1	7439-92-1

RN 273750-96-2 HCAPLUS

CN Lead lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====		
O	3	17778-80-2
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Lu	0.1	7439-94-3
Pb	1	7439-92-1

CC 57-2 (Ceramics)

IT 263872-43-1, Lead lutetium niobium titanium oxide
(PbLu0.45Nb0.45Ti0.1O3) 263872-44-2, Lead lutetium niobium
titanium oxide (PbLu0.4Nb0.4Ti0.2O3) 273750-90-6, Lead
lutetium niobium titanium oxide (PbLu0.35Nb0.35Ti0.3O3)
273750-91-7, Lead lutetium niobium titanium oxide
(PbLu0.32Nb0.32Ti0.36O3) 273750-92-8, Lead lutetium

niobium titanium oxide (PbLu0.3Nb0.3Ti0.4O3) 273750-93-9,
 Lead lutetium niobium titanium oxide (PbLu0.25Nb0.25Ti0.5O3)
 273750-94-0, Lead lutetium niobium titanium oxide
 (PbLu0.2Nb0.2Ti0.6O3) 273750-95-1, Lead lutetium niobium
 titanium oxide (PbLu0.15Nb0.15Ti0.7O3) 273750-96-2, Lead
 lutetium niobium titanium oxide (PbLu0.1Nb0.1Ti0.8O3)
 RL: FMU (Formation, unclassified); PRP (Properties); FORM
 (Formation, nonpreparative)
 (structure and properties of hot-pressed Pb(Lu1/2Nb1/2)O3-PbTiO3
 binary system ceramics)

L22 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1998:697565 Document No. 129:349593 Effects of B-site ions on the
 electromechanical coupling factors of Pb(B'B")O3-PbTiO3
 piezoelectric materials. Yamashita, Yohachi; Harada, Kouichi;
 Hosono, Yasuharu; Natsume, Shinya; Ichinose, Noboru (Materials and
 Devices Research Laboratories, R&D Center, Toshiba Corporation,
 Toshiba Yanagi-cho Works, Kawasaki, 210-8501, Japan). Japanese
 Journal of Applied Physics, Part 1: Regular Papers, Short Notes &
 Review Papers, 37(9B), 5288-5291 (English) 1998. CODEN: JAPNDE.
 ISSN: 0021-4922. Publisher: Japanese Journal of Applied Physics.
 AB The effect of B-site ions of Pb(B'B")O3-PbTiO3 (B'=Zn, Mg, Ni, Ga,
 Sc, In, Yb and B"=Nb, Ta) piezoelec. materials on the electromech.
 coupling factors has been studied. A relationship between
 electromech. coupling factor k_p near a morphotropic phase boundary
 (MPB) and an order/disorder tendency of B-site ions is
 systematically discussed. The reason why k_p of
 Pb[(Sc1/2Nb1/2)0.58Ti0.42]O3 (PSNT59/42) is larger than that of
 Pb[(Mg1/3Nb2/3)0.68Ti0.32]O3 (PMNT68/32) or
 Pb[(Sc1/2Ta1/2)0.58Ti0.42]O3 (PSTT55/45) was explained in terms of
 the disorder tendency of B-site ions of Pb(B'B")O3-PbTiO3. It may
 be concluded that a combination of the B-site elements which have a
 tendency of disorder play an important role in bringing about large
 electromech. coupling factors in MPB compn. From this viewpoint,
 MPB compns. of Pb[(Sc1/2Nb1/2)0.29(Mg1/3Nb2/3)0.34Ti0.37]O3
 (PSMNT29/34/37) and Pb[(Sc1/2Nb1/2)0.36(Ni1/3Nb2/3)0.26Ti0.38]O3
 (PSNNT36/26/38) maybe the two best combinations among all the
 Pb(B'B")O3-PbTiO3 systems.

IT 170965-44-3, Lead niobium titanium ytterbium oxide
 Nb0.25PbTi0.5Yb0.25O3

RL: PRP (Properties)

(effects of B-site ions on electromech. coupling factors of
 Pb(B'B")O3-PbTiO3 piezoelec. materials)

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
 (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4

Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-7 (Electric Phenomena)

Section cross-reference(s): 57

IT 132325-77-0, Lead scandium tantalum titanium oxide
($\text{PbSc}_{0.28}\text{Ta}_{0.28}\text{Ti}_{0.45}\text{O}_3$) 151562-24-2, Lead magnesium niobium
titanium oxide $\text{PbMg}_{0.23}\text{Nb}_{0.45}\text{Ti}_{0.32}\text{O}_3$ 153039-90-8, Lead niobium
scandium titanium oxide ($\text{PbNb}_{0.29}\text{Sc}_{0.29}\text{Ti}_{0.42}\text{O}_3$) 170965-44-3
, Lead niobium titanium ytterbium oxide $\text{Nb}_{0.25}\text{PbTi}_{0.5}\text{Yb}_{0.25}\text{O}_3$
189072-03-5 215544-42-6, Indium lead niobium titanium oxide
($\text{In}_{0.31}\text{PbNb}_{0.31}\text{Ti}_{0.37}\text{O}_3$) 215544-43-7, Gallium lead niobium
titanium oxide ($\text{Ga}_{0.25}\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{O}_3$) 215544-45-9 215544-46-0
RL: PRP (Properties)
(effects of B-site ions on electromech. coupling factors of
 $\text{Pb}(\text{B}'\text{B}'')\text{O}_3$ - PbTiO_3 piezoelec. materials)

L22 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1997:784092 Document No. 128:96578 Piezoelectric ceramic compositions
for high-oscillation-level devices. Kawai, Hidemasa; Sasaki,
Yasuhiro; Takahashi, Sadayuki (NEC Corp., Japan). Jpn. Kokai Tokkyo
Koho JP 09315856 A2 19971209 Heisei, 22 pp. (Japanese). CODEN:
JKXXAF. APPLICATION: JP 1996-137905 19960531.

AB Title compns. are represented by $x\text{Pb}(\text{Mn}_{1/3}\text{Sb}_{2/3})\text{O}_3$ - $y\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ -
 $z\text{PbTiO}_3$ ($x + y + z = 1$), where the point (x, y, z) is included in a
range and on the lines formed by binding 4 points: (0.15, 0.60,
0.25), (0.03, 0.72, 0.25), (0.03, 0.42, 0.55), and (0.15, 0.30,
0.55) in the ternary phase diagram. The compns. are represented by
 $x\text{Pb}(\text{Mn}_{1/3}\text{Nb}_{2/3})\text{O}_3$ - $y\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - $z\text{PbTiO}_3$ ($x + y + z = 1$), where
the point (x, y, z) is included in a range and on the lines formed
by binding 4 points: (0.03, 0.60, 0.37), (0.005, 0.625, 0.37),
(0.005, 0.485, 0.51), and (0.03, 0.46, 0.51) in the ternary phase
diagram. The compns. are represented by $x\text{Pb}(\text{Mn}_{1/2}\text{W}_{1/2})\text{O}_3$ -
 $y\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - $z\text{PbTiO}_3$ ($x + y + z = 1$), where the point (x, y, z)
is included in a range and on the lines formed by binding 4 points:
(0.03, 0.60, 0.37), (0.005, 0.625, 0.37), (0.005, 0.485, 0.51), and
(0.03, 0.46, 0.51) in the ternary phase diagram. The compns. are
represented by $x\text{Pb}(\text{Mn}_{1/3}\text{Ta}_{2/3})\text{O}_3$ - $y\text{Pb}(\text{Yb}_{1/2}\text{Nb}_{1/2})\text{O}_3$ - $z\text{PbTiO}_3$ ($x + y +$
 $z = 1$), where the point (x, y, z) is included in a range and on the
lines formed by binding 4 points: (0.06, 0.57, 0.37), (0.005, 0.625,
0.37), (0.005, 0.485, 0.51), and (0.06, 0.43, 0.51) in the ternary
phase diagram. The Pb in the compns. may be substituted with
 ≤ 15 mol% Ca, Ba, or St.

IT 170965-40-9P, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.3}\text{Ti}_{0.4}\text{Yb}_{0.3}\text{O}_3$) 170965-44-3P, Lead niobium titanium
ytterbium oxide ($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.25}\text{O}_3$) 201151-20-4P, Lead
niobium titanium ytterbium oxide ($\text{PbNb}_{0.28}\text{Ti}_{0.45}\text{Yb}_{0.27}\text{O}_3$)
201151-21-5P, Lead niobium titanium ytterbium oxide
($\text{PbNb}_{0.25}\text{Ti}_{0.5}\text{Yb}_{0.24}\text{O}_3$) 201151-27-1P, Lead niobium
titanium ytterbium oxide ($\text{PbNb}_{0.27}\text{Ti}_{0.45}\text{Yb}_{0.27}\text{O}_3$)
201151-28-2P, Lead niobium titanium ytterbium oxide

(PbNb_{0.24}Ti_{0.5}Yb_{0.24}O₃)

RL: PNU (Preparation, unclassified); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)

(piezoelec. ceramic compns. for high-oscillation-level devices)

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4
Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 201151-20-4 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.28}Ti_{0.45}Yb_{0.27}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.27	7440-64-4
Ti	0.45	7440-32-6
Nb	0.28	7440-03-1
Pb	1	7439-92-1

RN 201151-21-5 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb_{0.25}Ti_{0.5}Yb_{0.24}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.24	7440-64-4

Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

RN 201151-27-1 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.27Ti0.45Yb0.27O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Yb	0.27	7440-64-4
Ti	0.45	7440-32-6
Nb	0.27	7440-03-1
Pb	1	7439-92-1

RN 201151-28-2 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.24Ti0.5Yb0.24O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
O	3	17778-80-2
Yb	0.24	7440-64-4
Ti	0.5	7440-32-6
Nb	0.24	7440-03-1
Pb	1	7439-92-1

IC ICM C04B035-46

ICS C04B035-495; H01L041-187

CC 76-7 (Electric Phenomena)

Section cross-reference(s): 57

IT 170965-40-9P, Lead niobium titanium ytterbium oxide
(PbNb0.3Ti0.4Yb0.3O3) 170965-44-3P, Lead niobium titanium
ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) 201151-08-8P
201151-09-9P 201151-10-2P 201151-11-3P 201151-12-4P
201151-13-5P 201151-14-6P 201151-15-7P 201151-16-8P
201151-17-9P 201151-18-0P 201151-19-1P 201151-20-4P,
Lead niobium titanium ytterbium oxide (PbNb0.28Ti0.45Yb0.27O3)
201151-21-5P, Lead niobium titanium ytterbium oxide
(PbNb0.25Ti0.5Yb0.24O3) 201151-22-6P 201151-23-7P 201151-24-8P
201151-25-9P 201151-26-0P 201151-27-1P, Lead niobium
titanium ytterbium oxide (PbNb0.27Ti0.45Yb0.27O3)
201151-28-2P, Lead niobium titanium ytterbium oxide
(PbNb0.24Ti0.5Yb0.24O3) 201151-29-3P 201151-30-6P 201151-31-7P
201151-32-8P 201151-33-9P 201151-34-0P 201151-36-2P
201151-38-4P 201151-40-8P 201151-42-0P 201151-44-2P
201151-46-4P 201151-47-5P 201151-48-6P 201151-49-7P
RL: PNU (Preparation, unclassified); TEM (Technical or engineered
material use); PREP (Preparation); USES (Uses)

(piezoelec. ceramic compns. for high-oscillation-level devices)

L22 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1981:417193 Document No. 95:17193 Synthesis and study of some properties of quaternary oxides containing erbium. Belyaev, I. N.; Sholokhov, M. L.; Nguyen Khang (Rostov. Gos. Univ., Rostov, USSR). Zhurnal Neorganicheskoi Khimii, 26(4), 877-80 (Russian) 1981. CODEN: ZNOKAQ. ISSN: 0044-457X.

AB The solid-phase reaction of MM_1O_3 with ErM_2O_4 ($\text{M} = \text{Pd}, \text{Cd}, \text{Mg}$; $\text{M}_1 = \text{Ti}, \text{Zr}, \text{Hf}, \text{Sn}$; $\text{M}_2 = \text{Nb}, \text{Ta}$) at $1200\text{--}1300^\circ$ produced $\text{MErM}_1\text{M}_2\text{O}_7$ with a pyrochlore-type crystal structure. The Er quaternary oxides were identified by x-ray phase anal. MgM_1O_3 did not react with ErNbO_4 .

IT 77848-46-5P 77848-49-8P 77848-50-1P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(prepn. and crystal structure of)

RN 77848-46-5 HCAPLUS

CN Erbium hafnium lead niobium oxide (ErHfPbNbO_7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Hf	1	7440-58-6
Er	1	7440-52-0
Nb	1	7440-03-1
Pb	1	7439-92-1

RN 77848-49-8 HCAPLUS

CN Erbium lead niobium titanium oxide (ErPbNbTiO_7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Er	1	7440-52-0
Ti	1	7440-32-6
Nb	1	7440-03-1
Pb	1	7439-92-1

RN 77848-50-1 HCAPLUS

CN Erbium lead niobium zirconium oxide (ErPbNbZrO_7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Zr	1	7440-67-7

Er	1	7440-52-0
Nb	1	7440-03-1
Pb	1	7439-92-1

CC 78-3 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 75

IT 58072-15-4P 59186-83-3P 62852-74-8P 64296-74-8P 67115-62-2P
 77848-32-9P 77848-33-0P 77848-34-1P 77848-46-5P
 77848-47-6P 77848-48-7P 77848-49-8P 77848-50-1P
 77848-51-2P 77848-52-3P 77848-53-4P 77908-55-5P 77908-56-6P
 77908-57-7P 77908-58-8P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
 (Preparation)
 (prepn. and crystal structure of)

L22 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1980:485959 Document No. 93:85959 Crystallographic study of some mixed
 pyrochlores. Patil, S. L.; Darshane, V. S. (Dep. Chem., Inst. Sci.,
 Bombay, 400 032, India). Current Science, 49(11), 430-1 (English)
 1980. CODEN: CUSCAM. ISSN: 0011-3891.

AB PbXTiNbO₇ (X = Sm, Gd, Dy, Y, Nd, and Bi) were prepd. by the ceramic
 technique. All except the Nd compd. possess the pyrochlore
 structure. The Nd compd. contains a pyrochlore phase and a Nd₂Ti₂O₇
 monoclinic phase. The lattice parameter is given and the radius
 ratio discussed.

IT 37347-35-6P 56126-81-9P 56940-92-2P
 74505-82-1P

RL: SPN (Synthetic preparation); PREP (Preparation)
 (prepn. and crystal structure of pyrochlore-type)

RN 37347-35-6 HCAPLUS

CN Lead neodymium niobium titanium oxide (PbNdNbTiO₇) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Nd	1	7440-00-8
Pb	1	7439-92-1

RN 56126-81-9 HCAPLUS

CN Lead niobium samarium titanium oxide (PbNbSmTiO₇) (9CI) (CA INDEX
 NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	1	7440-32-6
Sm	1	7440-19-9

Nb	1	7440-03-1
Pb	1	7439-92-1

RN 56940-92-2 HCAPLUS

CN Dysprosium lead niobium titanium oxide (DyPbNbTiO₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Pb	1	7439-92-1
Dy	1	7429-91-6

RN 74505-82-1 HCAPLUS

CN Gadolinium lead niobium titanium oxide (GdPbNbTiO₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	7	17778-80-2
Gd	1	7440-54-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Pb	1	7439-92-1

CC 75-5 (Crystallization and Crystal Structure)

IT 12654-65-8P 37347-35-6P 56126-81-9P

56940-92-2P 74505-82-1P 74505-83-2P

RL: SPN (Synthetic preparation); PREP (Preparation)
(prepn. and crystal structure of pyrochlore-type)

L22 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1977:575720 Document No. 87:175720 Production of lead lanthanum zirconium niobium oxide (PbLaZrNbO₇) and lead neodymium zirconium niobium oxide (PbNdZrNbO₇) single crystals of a pyrochlore structure. Belyaev, I. N.; Aver'yanova, L. N.; Sogomonyan, R. G. (Rostov. Gos. Univ., Rostov, USSR). Izvestiya Vysshikh Uchebnykh Zavedenii, Khimiya i Khimicheskaya Tekhnologiya, 20(7), 1100 (Russian) 1977. CODEN: IVUKAR. ISSN: 0579-2991.

AB Single crystals of PbLaZrNbO₇ and PbNdZrNbO₇ were obtained by spontaneous crystn. from soln. in melt of KF, PbO, and B₂O₃. The compn. of the compds. detd. earlier by x-ray methods, was confirmed by chem. anal. of the single crystals.

IT 64616-13-3

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(crystal growth of, from flux melts)

RN 64616-13-3 HCAPLUS

CN Lead neodymium niobium zirconium oxide (PbNdNbZrO₇) (9CI) (CA INDEX

NAME)

Component	Ratio	Component Registry Number
=====		
O	7	17778-80-2
Zr	1	7440-67-7
Nb	1	7440-03-1
Nd	1	7440-00-8
Pb	1	7439-92-1

CC 75-1 (Crystallization and Crystal Structure)

IT 12664-78-7 64616-13-3

RL: PEP (Physical, engineering or chemical process); PROC (Process)
(crystal growth of, from flux melts)

L22 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1976:455876 Document No. 85:55876 Synthesis and some properties of
AIIDyBIVNbO7 compounds with pyrochlore crystal structure. Belyaev,
I. N.; Peresun'ko, A. F.; Korolev, G. K. (Rostov.-na-Donu Gos.
Univ., Rostov-on-Don, USSR). Izvestiya Vysshikh Uchebnykh
Zavedenii, Khimiya i Khimicheskaya Tekhnologiya, 19(4), 547-51
(Russian) 1976. CODEN: IVUKAR. ISSN: 0579-2991.

AB Compds. with the general formula AIIDyBIVNbO7 (AII = Cd, Ca, Sr, Pb;
BIV = Ti, Sn, Zr, Hf) were prep'd. by the solid phase reaction of
AIIBIVO3 and DyNbO4 at <1400°. These new quaternary oxides
have a pyrochlore type structure. For ceramic materials of all the
compds., the temp. dependence of the dielec. permeability and the
tangent of the angle of the dielec. loss was studied at
160-800°.

IT 56940-92-2P 59929-53-2P 59929-55-4P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)
(prepn. and dielec. properties of)

RN 56940-92-2 HCAPLUS

CN Dysprosium lead niobium titanium oxide (DyPbNbTiO7) (9CI) (CA INDEX
NAME)

Component	Ratio	Component Registry Number
=====		
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Pb	1	7439-92-1
Dy	1	7429-91-6

RN 59929-53-2 HCAPLUS

CN Dysprosium hafnium lead niobium oxide (DyHfPbNbO7) (9CI) (CA INDEX
NAME)

Component	Ratio	Component
-----------	-------	-----------

		Registry Number
=====	=====	=====
O	7	17778-80-2
Hf	1	7440-58-6
Nb	1	7440-03-1
Pb	1	7439-92-1
Dy	1	7429-91-6

RN 59929-55-4 HCAPLUS

CN Dysprosium lead niobium zirconium oxide (DyPbNbZrO7) (9CI) (CA
INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Zr	1	7440-67-7
Nb	1	7440-03-1
Pb	1	7439-92-1
Dy	1	7429-91-6

CC 78-3 (Inorganic Chemicals and Reactions)

Section cross-reference(s): 76

IT **56940-92-2P** 59186-82-2P 59929-45-2P 59929-46-3P
59929-47-4P 59929-48-5P 59929-49-6P 59929-50-9P 59929-51-0P
59929-53-2P 59929-54-3P **59929-55-4P**
59929-56-5P 59929-57-6P

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)

(prepn. and dielec. properties of)

L22 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1975:436150 Document No. 83:36150 New samarium niobate (AlISmBIVNbO7),
A is calcium, strontium, barium, lead, or cadmium, β is
titanium, tin, zirconium, or hafnium) compounds with the
pyrochlore(V) type crystalline structure. Belyaev, I. N.; Shramova,
A. G. (Rostov. Gos. Univ., Rostov, USSR). Izvestiya Akademii Nauk
SSSR, Neorganicheskie Materialy, 11(2), 269-72 (Russian) 1975.
CODEN: IVNMAW. ISSN: 0002-337X.

AB By using the solid-phase reaction method at 800-1400°, the
interaction in the ABO3--SmNbO4 systems, where A = Ca, Sr, Ba, Pb,
Cd, Zn, Ni, and B = Ti, Sn, Zr, Hf, Ce was studied. The formation
of 16 new ASmBNbO7 compds. was established where A = Pb, Cd, and B =
Ti, Sn, Zr, Hf; A = Ca, and B = Ti, Sn, Zr, Hf; A = Sr, and B = Sn,
Zr, Hf; A = Ba, and B = Hf. In the systems where CeO2 takes part,
the diffraction lines for CeO2 and SmNbO4 are slightly displaced,
which attests to their low mutual soly. in the solid state. X-ray
diffraction data and unit-cell parameter (a) are given for the new
compds.

IT **56094-90-7P** **56126-81-9P** **56126-82-0P**

RL: PRP (Properties); SPN (Synthetic preparation); PREP
(Preparation)

(prepn. and crystal structure of)

RN 56094-90-7 HCAPLUS

CN Hafnium lead niobium samarium oxide (HfPbNbSmO7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Hf	1	7440-58-6
Sm	1	7440-19-9
Nb	1	7440-03-1
Pb	1	7439-92-1

RN 56126-81-9 HCAPLUS

CN Lead niobium samarium titanium oxide (PbNbSmTiO7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Ti	1	7440-32-6
Sm	1	7440-19-9
Nb	1	7440-03-1
Pb	1	7439-92-1

RN 56126-82-0 HCAPLUS

CN Lead niobium samarium zirconium oxide (PbNbSmZrO7) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Zr	1	7440-67-7
Sm	1	7440-19-9
Nb	1	7440-03-1
Pb	1	7439-92-1

CC 75-5 (Crystallization and Crystal Structure)

IT 56091-65-7P 56092-64-9P 56094-54-3P 56094-90-7P

56094-91-8P 56095-32-0P 56095-33-1P 56095-34-2P 56095-35-3P

56095-37-5P 56095-38-6P 56095-39-7P 56095-40-0P 56126-80-8P

56126-81-9P 56126-82-0P

RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)

(prepn. and crystal structure of)

L22 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2006 ACS on STN

1973:8800 Document No. 78:8800 New compounds with pyrochlore structure. Belyaev, I. N.; Aver'yanova, L. N.; Ezhov, V. M.;

Balashov, D. V. (USSR). Zhurnal Neorganicheskoi Khimii, 17(10), 2842-3 (Russian) 1972. CODEN: ZNOKAQ. ISSN: 0044-457X.

AB The pyrochlore structure was identified by the a parameter of its unit cell, equal to 10.567, 10.710, 10.740, 10.740, 10.740, 10.556, 10.711, 10.255, 10.255, 10.348, and 10.348 Å in CaLaZrTaO₇, SrLaZrTaO₇, BaLaZrTaO₇, BaZrO₃, LaTaO₄, CdLaZrTaO₇, PbLaZrTaO₇, CdNdTiNbO₇, CdNdTiTaO₇, PbNdTiNbO₇, and PbNdTiTaO₇, resp. The a values were detd. from x-ray diffraction diagrams. The pyrochlore structure was not formed in the systems SrTiO₃-LaNbO₄ (LaTaO₄) and SrTiO₃-NdNbO₄ (NdTaO₄).

IT 37347-35-6

RL: PRP (Properties)
(crystal structure of)

RN 37347-35-6 HCAPLUS

CN Lead neodymium niobium titanium oxide (PbNdNbTiO₇) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	7	17778-80-2
Ti	1	7440-32-6
Nb	1	7440-03-1
Nd	1	7440-00-8
Pb	1	7439-92-1

CC 70-3 (Crystallization and Crystal Structure)

IT 12009-21-1 12056-84-7 37342-57-7 37346-32-0 37346-37-5
37346-38-6 37346-39-7 37347-26-5 37347-27-6 37347-35-6
37347-36-7

RL: PRP (Properties)
(crystal structure of)

=> d l18 cbib abs hitstr hitind 1-3 50-53 105-107

L18 ANSWER 1 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN

2004:856439 Document No. 142:83955 Etching gas for ferroelectric film. Ju, Suk Ho; Yu, Min Hee; Oh, Sang Jung; Yu, Cha Young (Samsung Electronics Co, Ltd., S. Korea). Repub. Korea KR 234363 B1 19991215, No pp. given (Korean). CODEN: KRXXFC. APPLICATION: KR 1997-523 19970110.

AB Ferroelec. film etching gas is provided to have high etching selection rate about a ferroelec. film and a platinum group metal thin film to produce a semiconductor device with high reliability. A gas for etching ferroelec. film of a semiconductor device includes Ar gas, HBr gas and CF₄ gas. The ferroelec. film etching gas further includes CHF₃ gas to have high etching selection rate about a ferroelec. film and a heat resistant metal. CHF₃ gas is 30 to 60% of the whole etching gas, the ferroelec. film is one selected from a group

including PZT, PLZT(Pb(La,Zr)TiO₃) and PNZT(Pb(Nb)(Zr,Ti)O₃), and the platinum group metal thin film is one selected from a group including Pt, Ir and IrO₂. The ferroelec. film etching gas prevents damage of an oxide layer and the platinum group metal thin film under the ferroelec. film to enable prodn. of a semiconductor device with high reliability.

IT 56572-83-9, Lead niobium titanium zirconium oxide
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (etching gas for ferroelec. film)
 RN 56572-83-9 HCAPLUS
 CN Lead niobium titanium zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Ti	x	7440-32-6
Nb	x	7440-03-1
Pb	x	7439-92-1

IC ICM H01L021-302
 CC 76-3 (Electric Phenomena)
 ST etching gas ferroelec film
 IT Etching

Ferroelectric films
 Semiconductor devices
 (etching gas for ferroelec. film)

IT 7439-88-5, Iridium, processes 7440-06-4, Platinum, processes
 12030-49-8, Iridium oxide (IrO₂) 12626-81-2, PZT 12676-60-7,
 PLZT 56572-83-9, Lead niobium titanium zirconium oxide
 RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
 (etching gas for ferroelec. film)

L18 ANSWER 2 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN
 2004:371211 Document No. 140:384731 Ferroelectric **app.**
 film, ferroelectric capacitor,
 ferroelectric memory, piezoelectric device, semiconductor
 device, method for manufacturing ferroelectric
 film, and method for manufacturing ferroelectric capacitor.
 Kijima, Takeshi; Hamada, Yasuaki; Natori, Eiji; Ohashi, Koji (Seiko
 Epson Corporation, Japan). PCT Int. Appl. WO 2004038733 A1
 20040506, 91 pp. DESIGNATED STATES: W: CN, KR; RW: AT, BE, CH, CY,
 DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR.
 (Japanese). CODEN: PIXXD2. APPLICATION: WO 2003-JP13556 20031023.
 PRIORITY: JP 2002-309487 20021024; JP 2003-76129 20030319; JP
 2003-85791 20030326; JP 2003-294072 20030818; JP 2003-302900
 20030827.

AB A ferroelec. film is composed of an oxide of

AB1-xNb_xO₃. The component A comprises at least Pb, and the component B comprises at least one of Zr, Ti, V, W, Hf, and Ta. The ferroelec. film contains Nb in an amt. of 0.05

$\leq x < 1$. This ferroelec. film can be used in any of 1T1C, 2T2C and simple matrix ferroelec. memories.

IT 683745-93-9, Lead niobium titanium zirconium oxide
(PbNb_{0.2}Ti_{0.6}Zr_{0.2}O₃) 683745-94-0, Lead niobium titanium
zirconium oxide (PbNb_{0.1}Ti_{0.7}Zr_{0.2}O₃)
RL: DEV (Device component use); USES (Uses)
(ferroelec. film, ferroelec.
capacitor, ferroelec. memory, piezoelec. device,
semiconductor device, method for manufg. ferroelec.
film, and method for manufg. ferroelec. capacitor)
RN 683745-93-9 HCAPLUS
CN Lead niobium titanium zirconium oxide (PbNb_{0.2}Ti_{0.6}Zr_{0.2}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.2	7440-67-7
Ti	0.6	7440-32-6
Nb	0.2	7440-03-1
Pb	1	7439-92-1

RN 683745-94-0 HCAPLUS
CN Lead niobium titanium zirconium oxide (PbNb_{0.1}Ti_{0.7}Zr_{0.2}O₃) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.2	7440-67-7
Ti	0.7	7440-32-6
Nb	0.1	7440-03-1
Pb	1	7439-92-1

IC ICM H01B003-12
ICS C01G025-00; C01G033-00; H01L027-10; H01L041-18
CC 76-10 (Electric Phenomena)
ST ferroelec film capacitor memory piezoelec device
IT Ferroelectric capacitors
Ferroelectric films
Ferroelectric memory devices
(ferroelec. film, ferroelec.
capacitor, ferroelec. memory, piezoelec. device,
semiconductor device, method for manufg. ferroelec.
film, and method for manufg. ferroelec. capacitor)
IT 683745-93-9, Lead niobium titanium zirconium oxide
(PbNb_{0.2}Ti_{0.6}Zr_{0.2}O₃) 683745-94-0, Lead niobium titanium

zirconium oxide (PbNb_{0.1}Ti_{0.7}Zr_{0.2}O₃)

RL: DEV (Device component use); USES (Uses)

(ferroelec. film, ferroelec.

capacitor, ferroelec. memory, piezoelec. device,

semiconductor device, method for manufg. ferroelec.

film, and method for manufg. ferroelec. capacitor)

L18 ANSWER 3 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN

2004:264601 Document No. 140:295952 Textured Bi-based oxide ceramic

films for ferroelectric devices. Desrochers,

Debra A.; Hendrix, Bryan C.; Roeder, Jeffrey F.; Hintermaier, Frank

S. (Advanced Technology Materials, Inc., USA; Infineon Technologies

North America Corp.). U.S. US 6713797 B1 20040330, 14 pp.,

Cont.-in-part of U.S. Ser. No. 107,861. (English). CODEN: USXXAM.

APPLICATION: US 1998-197984 19981123. PRIORITY: US 1998-107861

19980630.

AB The invention relates generally to Bi-based metal oxide ceramic films used in integrated circuits (ICs). More particularly, the invention relates to textured Bi-based metal oxide ceramic films with high switchable elec. polarization. A nonvolatile memory cell is fabricated in which the capacitor comprises a Bi-based metal oxide having a crystallog. texture to produce high switchable polarization. In 1 embodiment, the Bi-based metal oxide ceramic is expressed by $YaBibX_2O_c$, where Y represents a 2-valent cation and X represents a 5-valent cation. In 1 embodiment, Y is at least one element selected from Sr, Ba, Pb, and Ca; and X represents at least one element selected from Ta and Nb. The Bi-based metal oxide is deposited amorphously by CVD. The amorphous CVD material is post-deposition processed to transform it into a material with the desired elec. properties.

IT 270073-37-5P, Bismuth lead niobium tantalum oxide

RL: DEV (Device component use); PNU (Preparation, unclassified);

PREP (Preparation); USES (Uses)

(textured Bi-based oxide ceramic films for

ferroelec. devices)

RN 270073-37-5 HCAPLUS

CN Bismuth lead niobium tantalum oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Bi	x	7440-69-9
Ta	x	7440-25-7
Nb	x	7440-03-1
Pb	x	7439-92-1

IC ICM H01L029-76

ICS H01L029-94; H01L031-062; H01L031-119

INCL 257295000; 257310000

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57

- IT Films
(ceramic; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Vapor deposition process
(chem.; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Nonvolatile memory devices
(ferroelec.; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Ceramics
(films; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Ferroelectric memory devices
(nonvolatile; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Annealing
Ferroelectric apparatus
Ferroelectric capacitors
Integrated circuits
Texture (metallographic)
(textured Bi-based oxide ceramic films for ferroelec. devices)
- IT Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(textured Bi-based oxide ceramic films for ferroelec. devices)
- IT 162033-89-8P, Bismuth niobium strontium oxide 166877-45-8DP, Bismuth strontium tantalum oxide, derivs. 188359-86-6P, Bismuth niobium strontium tantalum oxide 270073-37-5P, Bismuth lead niobium tantalum oxide 270073-41-1P, Barium bismuth calcium lead niobium strontium tantalum oxide 277748-33-1P, Bismuth calcium niobium strontium tantalum oxide
RL: DEV (Device component use); PNU (Preparation, unclassified); PREP (Preparation); USES (Uses)
(textured Bi-based oxide ceramic films for ferroelec. devices)
- IT 142617-53-6, Bismuth, tris(2,2,6,6-tetramethyl-3,5-heptanedionato- κ O, κ O')-, (OC-6-11)-
RL: RCT (Reactant); RACT (Reactant or reagent)
(vapor deposition precursor; textured Bi-based oxide ceramic films for ferroelec. devices)
- IT 111-65-9, Octane, processes 124-18-5, Decane 3030-47-5, Pentamethyldiethylenetriamine
RL: NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(vapor deposition solvent; textured Bi-based oxide ceramic films for ferroelec. devices)

L18 ANSWER 50 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:400121 Document No. 133:186229 Phase development in pulsed laser deposited Pb[Yb0.5Nb0.5]O3-PbTiO3 thin films. Bornand, V.;

Trolier-McKinstry, S. (Materials Research Laboratory, Department of Materials Science and Engineering, The Pennsylvania State University, University Park, PA, 16802-4801, USA). Thin Solid Films, 370(1,2), 70-77 (English) 2000. CODEN: THSFAP.

ISSN: 0040-6090. Publisher: Elsevier Science S.A..

AB (1-X)Pb[Yb0.5Nb0.5]O3 - xPbTiO3 (PYbN-PT, x = 0.4 and 0.5)/SrRuO3 (SRO) heterostructures have been prep'd. by pulsed laser deposition (PLD) on <100>pc-oriented LaAlO3 (LAO) substrates (the subscript pc refers here to the pseudo-cubic perovskite subcell). Careful control of both lead volatilization and pyrochlore formation during the growth appears to be essential to obtain perovskite PYbN-PT thin films with good cryst., elec. and ferroelec. properties. By utilizing PbO-enriched ceramic targets and adjusting deposition parameters such as the laser frequency, the chamber pressure, the target to substrate distance and/or the substrate temp., high-quality thin films can be successfully grown with a single out-of-plane <001>pc orientation and an in-plane heteroepitaxial arrangement of [110]pc PYbN-PT // [110]pc. SrRuO3. When processed in the 560 - 660° temp. range, with a dynamic O3/O2 pressure of 300 - 400 mTorr and relatively high laser repetition rates, PYbN-PT films exhibit improved ferroelec. properties. The typical values of the remanent (Pr) and satn. (Ps) polarizations increase up to 50 and 80 µC/cm2, resp.

IT 170965-40-9, Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) 170965-44-3, Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3)
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(ceramic thin film; phase development in pulsed laser deposited)

RN 170965-40-9 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.3Ti0.4Yb0.3O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.3	7440-64-4
Ti	0.4	7440-32-6
Nb	0.3	7440-03-1
Pb	1	7439-92-1

RN 170965-44-3 HCAPLUS

CN Lead niobium titanium ytterbium oxide (PbNb0.25Ti0.5Yb0.25O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Yb	0.25	7440-64-4

Ti	0.5	7440-32-6
Nb	0.25	7440-03-1
Pb	1	7439-92-1

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 56, 57, 75, 77

IT **Ferroelectric films**

(Pb[Yb_{0.5}Nb_{0.5}]O₃-PbTiO₃; phase development in pulsed laser deposited)

IT 12034-65-0, Lead niobium ytterbium oxide (PbNb_{0.5}Yb_{0.5}O₃)
 12060-00-3, Lead titanium oxide (PbTiO₃) **170965-40-9**, Lead
 niobium titanium ytterbium oxide (PbNb_{0.3}Ti_{0.4}Yb_{0.3}O₃)
170965-44-3, Lead niobium titanium ytterbium oxide
 (PbNb_{0.25}Ti_{0.5}Yb_{0.25}O₃)

RL: PEP (Physical, engineering or chemical process); PRP
 (Properties); PROC (Process)

(ceramic thin film; phase development in pulsed laser deposited)

L18 ANSWER 51 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN

2000:388526 Document No. 133:11829 Lead titanate isolation layers for
 use in fabricating PZT-based capacitors and similar structures.
 Boyer, Leonard L.; Evans, Joseph T., Jr.; Velasquez, Naomi B.
 (Radiant Technologies, Inc., USA). U.S. US 6074885 A
20000613, 5 pp. (English). CODEN: USXXAM. APPLICATION: US
 1997-978308 19971125.

AB A method for constructing a device having a bottom electrode in
 contact with a **layer** of a **ferroelec.** dielec.
 material. In the method of the present invention, a layer of a
 field ferroelec. material is deposited on a substrate and etched to
 form a trench in which the bottom electrode is constructed. The
 bottom electrode is then deposited and a **layer** of the
ferroelec. dielec. material is deposited over the bottom
 electrode and at least a portion of the field ferroelec. material.
 The **ferroelec.** **layers** are deposited in a
 perovskite state. These layers are etched back to the substrate in
 those areas that are outside of the device.

IT **56572-83-9**, Lead niobium titanium zirconium oxide

RL: DEV (Device component use); PEP (Physical, engineering or
 chemical process); PROC (Process); USES (Uses)

(lead titanate isolation layers for use in fabricating PZT-based
 capacitors and similar structures)

RN **56572-83-9** HCAPLUS

CN Lead niobium titanium zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Ti	x	7440-32-6
Nb	x	7440-03-1
Pb	x	7439-92-1

IC ICM H01L029-94
ICS H01L021-314
INCL 438003000
CC 76-8 (Electric Phenomena)
IT Capacitor electrodes
Ferroelectric capacitors
Ferroelectric films
Perovskite-type crystals
Semiconductor device fabrication
(lead titanate isolation layers for use in fabricating PZT-based capacitors and similar structures)
IT 12060-00-3, Lead titanate 12626-81-2, PZT 12676-60-7, Lanthanum lead titanium zirconium oxide (LaO-1PbO-1TiO-1ZrO-1O3)
56572-83-9, Lead niobium titanium zirconium oxide
114952-68-0, Lanthanum lead titanium oxide (LaO-1PbO-1TiO3)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(lead titanate isolation layers for use in fabricating PZT-based capacitors and similar structures)

L18 ANSWER 52 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN
2000:368776 Document No. 132:355768 Textured Bi-based oxide
ferroelectric ceramic films for capacitors, memory devices, and switches. Desrochers, Debra A.; Hendrix, Bryan C.; Roeder, Jeffrey F.; Hintermaier, Frank S. (Infineon Technologies A.-G., Germany; Advanced Technology Materials, Inc.). PCT Int. Appl. WO 2000031791 A1 20000602, 41 pp. DESIGNATED STATES: W: CN, JP, KR; RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US27683 19991122. PRIORITY: US 1998-197984 19981123.

AB A nonvolatile memory cell is claimed wherein the capacitor comprises a Bi-based metal oxide having a crystallog. texture to produce high switchable polarization. SrBi2Ta2O9 is a suitable ferroelec.

IT 270073-37-5P, Bismuth lead niobium tantalum oxide
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); PROC (Process); USES (Uses)

(textured bismuth-based oxide ferroelec. ceramic films for capacitors, memory devices, and switches)

RN 270073-37-5 HCAPLUS

CN Bismuth lead niobium tantalum oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Bi	x	7440-69-9
Ta	x	7440-25-7
Nb	x	7440-03-1

Pb | x | 7439-92-1

IC ICM H01L021-316
 CC 76-8 (Electric Phenomena)
 ST bismuth oxide compd ferroelec film
 IT Electric switches
 (ferroelec.; textured bismuth-based oxide ferroelec.
 ceramic films for capacitors, memory devices, and
 switches)

IT Ferroelectric capacitors
 Ferroelectric films
 Nonvolatile memory devices
 (textured bismuth-based oxide ferroelec. ceramic
 films for capacitors, memory devices, and switches)

IT 7440-69-9DP, Bismuth, oxide compds., processes 12537-53-0P,
 Bismuth calcium tantalum oxide 50811-07-9P, Bismuth strontium
 tantalum oxide (Bi₂SrTa₂O₉) 104626-03-1P, Bismuth lead niobium
 oxide 162033-89-8P, Bismuth niobium strontium oxide
 166877-45-8P, Bismuth strontium tantalum oxide 170352-35-9P,
 Bismuth calcium niobium oxide 188359-86-6P, Bismuth niobium
 strontium tantalum oxide 188776-16-1P, Barium bismuth tantalum
 oxide 188776-18-3P, Barium bismuth niobium oxide 270073-33-1P,
 Bismuth lead tantalum oxide 270073-35-3P, Barium bismuth niobium
 tantalum oxide 270073-37-5P, Bismuth lead niobium tantalum
 oxide 270073-39-7P, Bismuth calcium niobium tantalum oxide
 270073-41-1P
 RL: DEV (Device component use); PEP (Physical, engineering or
 chemical process); SPN (Synthetic preparation); TEM (Technical or
 engineered material use); PREP (Preparation); PROC (Process); USES
 (Uses)
 (textured bismuth-based oxide ferroelec. ceramic
 films for capacitors, memory devices, and switches)

L18 ANSWER 53 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN
 2000:210562 Document No. 132:245032 **Ferroelectric** thin
 films of reduced tetragonality for FRAMs. Ramesh,
 Ramamoorthy (Telcordia Technologies, Inc., USA; University of
 Maryland). PCT Int. Appl. WO 2000017936 A1 20000330, 29
 pp. DESIGNATED STATES: W: AU, CA, CN, ID, IN, JP, KR, MX, SG; RW:
 AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT,
 SE. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US22178
 19990924. PRIORITY: US 1998-160778 19980924.

AB A ferroelec. material, esp. as incorporated into a crystallog.
 oriented epitaxial ferroelec. cell, of Pb_{1-x}La_xZr_yTi_{1-y}O₃ or
 Pb_{1-x}Nb_xZr_yTi_{1-y}O₃ having a moderately high La or Nb content such
 that the unit cell is less tetragonal, i.e., more nearly cubic, so
 as to reduce stress effects. A most preferred value of the c/a
 const. is .apprx.1.01. Exemplary compositional ranges for x are 6
 to 20% for La and 3 to 15% for Nb, when y is 20%. The reduced
 polarizabilities voltages are consistent with integrated ferroelec.
 memories operating at 3.0 V and lower.

IT 261715-98-4, Lead niobium titanium zirconium oxide

(Pb0.85-0.97Nb0.03-0.15Ti0.8Zr0.2O3) 261715-99-5, Lead
niobium titanium zirconium oxide (Pb0.94Nb0.06Ti0.8Zr0.2O3)
261716-00-1, Lead niobium titanium zirconium oxide
(Pb0.9Nb0.1Ti0.8Zr0.2O3)

RL: DEV (Device component use); PRP (Properties); USES (Uses)
(ferroelec. thin films of reduced
tetragonality for FRAMs)

RN 261715-98-4 HCAPLUS

CN Lead niobium titanium zirconium oxide (Pb0.85-0.97Nb0.03-
0.15Ti0.8Zr0.2O3) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.2	7440-67-7
Ti	0.8	7440-32-6
Nb	0.03 - 0.15	7440-03-1
Pb	0.85 - 0.97	7439-92-1

RN 261715-99-5 HCAPLUS

CN Lead niobium titanium zirconium oxide (Pb0.94Nb0.06Ti0.8Zr0.2O3)
(9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.2	7440-67-7
Ti	0.8	7440-32-6
Nb	0.06	7440-03-1
Pb	0.94	7439-92-1

RN 261716-00-1 HCAPLUS

CN Lead niobium titanium zirconium oxide (Pb0.9Nb0.1Ti0.8Zr0.2O3) (9CI)
(CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	3	17778-80-2
Zr	0.2	7440-67-7
Ti	0.8	7440-32-6
Nb	0.1	7440-03-1
Pb	0.9	7439-92-1

IC ICM H01L029-76

ICS H01L029-94; H01L031-062; H01L031-113; H01L031-119

CC 76-8 (Electric Phenomena)

Section cross-reference(s): 57, 75

IT Memory devices

(RAM (random access); ferroelec. thin films

- of reduced tetragonality for FRAMs)
- IT **Ferroelectric films**
 Ferroelectric memory devices
 Integrated circuits
 (ferroelec. thin films of reduced tetragonality for FRAMs)
- IT 106390-68-5, Lanthanum lead titanium zirconium oxide (La_{0.07}Pb_{0.93}Ti_{0.35}Zr_{0.65}O₃) 115454-11-0, Lead titanium zirconium oxide (PbTi_{0.8}Zr_{0.2}O₃) 261715-97-3, Lanthanum lead titanium zirconium oxide (La_{0.06}-0.2Pb_{0.8}-0.94Ti_{0.8}Zr_{0.2}O₃) 261715-98-4, Lead niobium titanium zirconium oxide (Pb_{0.85}-0.97Nb_{0.03}-0.15Ti_{0.8}Zr_{0.2}O₃) 261715-99-5, Lead niobium titanium zirconium oxide (Pb_{0.94}Nb_{0.06}Ti_{0.8}Zr_{0.2}O₃) 261716-00-1, Lead niobium titanium zirconium oxide (Pb_{0.9}Nb_{0.1}Ti_{0.8}Zr_{0.2}O₃)
 RL: DEV (Device component use); PRP (Properties); USES (Uses)
 (ferroelec. thin films of reduced tetragonality for FRAMs)
- L18 ANSWER 105 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN X
 1972:411006 Document No. 77:11006 Performance of sputtered Pb_{0.92}Bi_{0.07}La_{0.01}(Fe_{0.405}Nb_{0.325}Zr_{0.27})O₃ ferroelectric memory films. Atkin, R. B. (Res. Lab., IBM, San Jose, CA, USA). Ferroelectrics, 3(2-3-4), 213-15 (English) 1972. CODEN: FEROA8. ISSN: 0015-0193.
- AB The ferroelec. behavior of sputtered Pb_{0.92}-Bi_{0.07}La_{0.01}(Fe_{0.405}Nb_{0.325}Zr_{0.27})O₃ films was evaluated for possible use in a ferroelec.-photoconductor memory. The material was sputtered onto Pt film substrates which also served as the lower electrodes. Au dots were evapd. through a mask onto the surface of the ferroelec. to form the upper electrodes. Hysteresis loops showed the films could be switched rapidly at very low voltages, but loop squareness decreased substantially at lower frequencies. This decrease in Pr corresponds to spontaneous depoling of the ferroelec. Switching and depoling were studied with rectangular voltage pulses. The rate and extent of depoling were detd. by poling dots and measuring the charge stored after various times. Depoling occurs rapidly during the first few msec and then relatively slowly. Depoling was also monitored with low-voltage, alternating polarity, disturbing pulses applied to the dot. These disturbing pulses were 5% of the switching voltage and should simulate the noise or dark signal that would be repetitively applied to unaddressed bit positions in a ferroelec.-photoconductor memory. These disturb pulses did accelerate depoling, but not an intolerable amt. Switching fatigue was evaluated with sine wave and rectangular voltage pulse excitation. Degradation was not significant before .apprx.109 polarization reversals. These ferroelec. films have characteristics suitable for certain memory applications.
- IT 12777-88-7
 RL: DEV (Device component use); USES (Uses)
 (ferroelec. sputtered films from bismuth- and

lanthanum-contg., for memory devices)
 RN 12777-88-7 HCAPLUS
 CN Iron lead niobium zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Nb	x	7440-03-1
Pb	x	7439-92-1
Fe	x	7439-89-6

CC 71-6 (Electric Phenomena)
 ST sputtered **ferroelec** film; photoconductor
 ferroelec memory; lead ferrate niobate ferroelec
 IT 12777-88-7
 RL: DEV (Device component use); USES (Uses)
 (ferroelec. sputtered films from bismuth- and
 lanthanum-contg., for memory devices)
 IT 7439-91-0, uses and miscellaneous 7440-69-9, uses and
 miscellaneous
 RL: DEV (Device component use); USES (Uses)
 (ferroelec. sputtered films from iron lead
 niobium zirconium oxide contg., for memory devices)

L18 ANSWER 106 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN
 1972:411003 Document No. 77:11003 Design and performance of a thin
 film **ferroelectric**-photoconductor storage device.
 Chapman, D. W.; Mehta, R. R. (Syst. Dev. Div., IBM Corp., San Jose,
 CA, USA). Ferroelectrics, 3(2-3-4), 101-6 (English) 1972.
 CODEN: FEROA8. ISSN: 0015-0193.

AB A new configuration of a ferroelec./photoconductor (FE/PC) memory
 chip is described. The substrate electrode is divided into 3
 islands; a bus bar and 2 ground or ref. islands. A 1 μ
 film of the ferroelec. Pb_{0.92}Bi_{0.07}-
 La_{0.01}(Fe_{0.405}Nb_{0.325}Zr_{0.27})O₃ is sputtered on the 2 ground or ref.
 islands. A discontinuous film of Au is deposited on the ferroelec.,
 and a CdSe photoconductor .apprx.0.7 μ thick is evapd. on the
 entire surface, covering the ferroelec. and bus
 bar. The top "transparent electrode" consists of a pattern of thin
 strips of Au 2 μ wide, sepd. by 4 μ spaces, covering the
 entire surface of the device, which measures 1.27 + 1.27 cm.
 Two light beams are used to access the device. In comparison with
 prior art designs, this design yields a redn. of .apprx.1000 in the
 noise from the unaddressed area of the device, permitting easier
 detection of signals from the addressed spots. The charging time
 consts. for the strips are quite satisfactory for switching the
 device in 50 μ sec. Exptl. data showing the functioning of the
 device are presented.

IT 12777-88-7
 RL: DEV (Device component use); USES (Uses)

(ferroelec. substances, contg. bismuth and lanthanum, in
ferroelec.-photoconductors storage ddevices)

RN 12777-88-7 HCAPLUS

CN Iron lead niobium zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
=====	=====	=====
O	x	17778-80-2
Zr	x	7440-67-7
Nb	x	7440-03-1
Pb	x	7439-92-1
Fe	x	7439-89-6

CC 71-6 (Electric Phenomena)

IT Memory devices

(ferroelec.-photoconductor film)

IT Photoconductors

(memory devices from films of ferroelec.
substances and)

IT 12777-88-7

RL: DEV (Device component use); USES (Uses)

(ferroelec. substances, contg. bismuth and lanthanum, in
ferroelec.-photoconductors storage ddevices)

L18 ANSWER 107 OF 107 HCAPLUS COPYRIGHT 2006 ACS on STN

1966:40232 Document No. 64:40232 Original Reference No. 64:7482d-f
Current from a shock-loaded short-circuited ferroelectric ceramic
disk. Halpin, W. J. (Sandia Lab., Albuquerque, NM). Journal of
Applied Physics, 37(1), 153-63 (English) 1966. CODEN:
JAPIAU. ISSN: 0021-8979.

AB Thin circular disks of polarized ferroelectric ceramics were
equipped with electrodes on their faces, and the electrodes were
connected by a short circuit. Each disk was traversed by a stress
wave, and the resulting current pulse through the short circuit was
measured. The stress wave was generated by impact and made to
propagate along the disk axis in a direction opposite to that of
polarization. Current-pulse data are presented from tests with
Pb_{0.99}Nb_{0.02}(Zr_{0.95}Ti_{0.05})_{0.98}O₃, both normally sintered and X
hot-pressed, and with Pb_{0.99}Nb_{0.02}(Zr_{0.68}Ti_{0.07}Sn_{0.25})_{0.98}O₃ for
impact stresses ranging from a few to several tens of kilobars.
Over this range of stress both the shape of the current pulse and
its time integral are strongly stress dependent. This behavior
results from the combined effects of stress on (1) remanent
polarization (2) polarizability, and (3) conductivity of the
ferroelectric material enveloped by the wave. In
a narrow range of stress where remanent polarization is reduced to
near zero and where conductivity is negligible, the observed
behavior can be adequately described by means of a mathematical
model which is developed. The model includes the effect of stress
wavefront tilt which occurs in impact experiments to an extent that
influences significantly the character of the current pulse. Some

conclusions are drawn about permittivity of shock-loaded ferroelectrics and the extent to which remanent polarization is affected by the rapidly applied large electric fields which accompany the process of current production.

IT 56572-83-9, Lead niobium titanium zirconium oxide
(elec. current from shock-loaded short-circuited disk of)
RN 56572-83-9 HCAPLUS
CN Lead niobium titanium zirconium oxide (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
O	x	17778-80-2
Zr	x	7440-67-7
Ti	x	7440-32-6
Nb	x	7440-03-1
Pb	x	7439-92-1

CC 9 (Electric and Magnetic Phenomena)
IT 37323-27-6, Lead niobium tin titanium zirconium oxide
56572-83-9, Lead niobium titanium zirconium oxide
(elec. current from shock-loaded short-circuited disk of)

=>